THE UNIVERSITY OF QUEENSLAND

AUSTRALIA

Developing Trial Intervention Model ‘Children Say No to Secondhand Smoke’

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A thesis submitted for the degree of Doctor of Philosophy at
The University of Queensland in 2014

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Abstract

Secondhand smoke (SHS) has a detrimental effect on community health, especially children's health. Symptoms and diseases caused by children's exposure to SHS include middle ear disease, adverse respiratory symptoms, increased respiratory infections, worsening of asthma, decreased lung function and sudden infant death syndrome (US DHHS, 2006, US DHHS, 2007).

In Vietnam, the prevalence of smoking is 47.4% in adult males and 1.4% in adult females (MOH, 2010). The prevalence of in-home smoking is high (Wipfli et al., 2009, Suzuki et al., 2009), resulting in a high prevalence of children exposed to SHS, from 60% to 70% (Suzuki et al., 2009, Minh et al., 2007).

Children in Vietnam, especially at primary school age, may be influential in stopping their parents' smoking in their presence (Trang et al., 2006). Vietnamese parents tend to listen to, learn from and share opinions with their children on different aspects of living (Xuan et al., 2013). Children of primary school age are seen as effective change agents of behaviour in their contacts including parents and peers in relation to issues of health education (Olayiwole et al., 2003, Onyango-Ouma et al., 2005, Rohde and Sadjimin, 1980, Dickman and Melek, 2013).

The primary aim of this research is to provide a mechanism to create a home environment free from secondhand smoke for children, by involving primary school children aged 8 to 11 as change agents to decrease the in-home smoking of their parents and hence their exposure to SHS at home.

The specific aims of the study were to:

1. explore children's self-reported exposure to SHS at home pre- and post-intervention
2. evaluate the pre- and post-intervention knowledge, attitudes and practices (KAP) of children aged from 8 to 11 years in relation to the harmful effects of SHS and the prevention of SHS exposure
3. assess the capacity of children to persuade adults not to smoke indoors in their own homes after the intervention
4. implement the intervention model 'Children Say No to Secondhand Smoke' in a district in the North of Vietnam and make suggestions for its improvement

A quasi-experimental design was used that included 1,288 children aged 8 to 11 years old in grades 3, 4 and 5 in three selected primary schools in the Chuong My district, Hanoi, Vietnam from August 2011 to May 2012. A mixed method approach was used that included quantitative surveys (self-administered questionnaire) of the children pre- and post-intervention and qualitative data acquisition (focus group discussions and in-depth interviews) from the children involved, parents, teachers, and the director of the Department of Education and Training in the district at the end of the intervention. The three schools used in this study were randomly assigned as: full intervention, partial intervention and control.

School-based intervention activities were implemented in the full intervention school over a 6 month period and included weekly lessons on the harmful effects of SHS to children's health and on the persuasions of smokers about not to smoke in-home.

Of the 1,288 children surveyed, 66.0% reported living with smokers. The proportions of children who reported the occurrence of in-home smokers were high in all the three selected schools at the baseline survey (83.0%; 77.5% and 75.2% in the full intervention, partial intervention and control schools respectively). A high pre-intervention percentage of children's self-reported exposure to SHS at home was recorded (86.4%, 70.3% and 83.5% in the three schools). After the intervention program there was a significant reduction of in-home smokers from 83.0% to 59.8% and of children's self-reported exposure to SHS from 86.4% to 59.8% in the full intervention school while no significant changes were observed in the other two schools.

Children's knowledge on the harmful effects of SHS and their attitudes and practices on the avoidance of SHS exposure were significantly improved in all three schools after the intervention. However, the most impressive increases in knowledge, attitudes and practices of children was seen in the full intervention school between the post- versus the pre-intervention times respectively (81.4% children had good knowledge vs 3.3%; 66.0% had good attitudes vs 38.5%; and 51.9% of children reported good practices vs 9.8%). Post-intervention, the knowledge, attitudes and practices of children in the full intervention school were significantly higher than that of their counterparts in the other two schools.

The roles of children as change agents in persuading their smoking fathers and other smokers not to smoke in-home was recognised and supported by all study participants, including teachers, children and children's parents and the leader of the district Department of Education and Training.

Declaration by author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my research higher degree candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

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Publications during candidature

1. Le Thi Thanh Huong, Mike Capra, Margaret Cook, Le Vu Anh, 2011. An explanatory and pilot study for the intervention program's feasibility "Children Say No to Secondhand Smoke". *Vietnam Public Health Journal*, Vol. 21**,** pages 25-31.
2. Le Thi Thanh Huong, 2012. Secondhand smoke and children's health. *Vietnam Public Health Journal*, Vol. 22, pages 11-19.
3. Le Thi Thanh Huong, Mike Capra, Margaret Cook, Le Vu Anh, 2012. Knowledge and attitudes of primary school children on secondhand smoke. *Vietnam Journal of Practical Medicine*, (Vol. 849 + 850), page 393-396.

Publications included in this thesis

No publications included.

Contributions by others to the thesis

No contributions by others.

Statement of parts of the thesis submitted to qualify for the award of another degree

None.

Acknowledgement

I sincerely thank the AusAID program for providing me the scholarship to study at the University of Queensland, Australia and thank the American Cancer Society (USA) for granting me financial support to implement my PhD study at the field site.

My deepest thanks go to my principal supervisor, Professor Mike Capra for his inspiration, patience and intellectual guidance; and to my associate supervisor, Dr Margaret Cook for her expertise guidance and continuous encouragement and support. I sincerely thank my external supervisor, Professor Le Vu Anh for his nonstop support and encouragement during my PhD study. I also thank Ruth Ridgway for her editing of my thesis.

I am grateful to my colleagues at the Hanoi School of Public Health for their support while I was away for my study. I especially thank Tran Khanh Long, Bui Thi Tu Quyen and Ho Thi Hien for their statistical and qualitative advice during the analysis of my study, from which I learnt a lot. Special thanks go to my colleage Tran Thi Thu Thuy, who creatively drew pictures for the intervention materials. I also thank Do Phuc Huyen and Phan Thuy Linh and other colleagues at the Department of Environmental Health (Hanoi School of Public Health) who had supported me during the data collection during my fieldwork.

My sincere thanks go to:

- Mr Nguyen Van Vung, the Head of the Department of Education and Training of the Chuong My district, Hanoi for his approval and support for the implementation of the study in the selected primary schools in the district.
- Teachers, children and children's parents of the three selected primary schools in the Chuong My district (Quang Bi Primary School, Tot Dong Primary School and Trung Hoa Primary School) for their enthusiastic and unconditional participation in the study and the intervention.

Last but not least, I wholeheartedly thank my husband, Chien, and my two sons, Hoang Minh and Nhat Minh, my mother and my younger sister. Without their love, encouragement, patience and sacrifice, I would never have finished this challenging journey.

Key words

Children as change agents/ Children as agents of change

Primary school children

Secondhand smoke

Smoking outdoors

Smoking indoors

Tobacco smoke

Vietnam

Australian and New Zealand Standard Research Classifications (ANZSRC)

- ANZSRC code: 111704, Community Child Health – 40%
- ANZSRC code: 111705, Environmental and Occupational Health and Safety – 30%
- ANZSRC code: 111712, Health Promotion – 30%

Fields of Research (FoR) Classification

- FoR code: 1117, Public Health and Health Services – 90%
- FoR code: 1301, Specialist Studies in Education – 10%

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List of Abbreviations used in the thesis

CASI	Computer-assisted self-administered interview
CDC	Centre for Disease Prevention and Control (USA)
COMBI	Communication for behavioural impact
COPD	Chronic obstructive pulmonary disease
CtC	Child to Child
DALY	Disability adjusted life year
DHHS or US DHHS	Department of Health and Human Services of the United States of America (USA)
DoET	Department of Education and Training
DSA	Designated Smoking Area
EPA	Environmental Protection Agency (USA)
ETS	Environmental Tobacco Smoke
FEF	Forced expiratory flow rate
FEV1	Forced expiratory volume in one second
FGD	Focus group discussion
FVC	Forced vital capacity
GATS	Global Adult Tobacco Survey
GDP	Gross domestic product
GSO	General Statistics Office
HIV/AIDS	Human Immunodeficiency Virus Infection / Acquired Immunodeficiency Syndrome
HSPH	Hanoi School of Public Health
HWWS	Hand washing with soap
IARC	International Agency for Research on Cancer
IDI	In-depth interview
ID number	Identification number
KAP	Knowledge, Attitudes and Practices
LRTIs	Lower Respiratory Tract Infections
MI	Myocardial infarction
MOCI	Ministry of Communication and Information (Vietnam)

MOET	Ministry of Education and Training (Vietnam)
MOH	Ministry of Health (Vietnam)
MOIT	Ministry of Industry and Trade (Vietnam)
MS	Mainstream smoke
NCD	Non communicable disease
NCI	National Cancer Institute (USA)
NTCP	National Tobacco Control Policy (Vietnam)
OM	Otitis media
OME	Otitis media with effusion
PI	Principal Investigator
SAQ	Self-administered questionnaire
SFH	Smoke Free Home
SHS	Secondhand Smoke
SIDS	Sudden infant death syndrome
SPSS	Statistical Package for the Social Sciences
SS	Sidestream smoke
VINACOSH	Vietnam Steering Committee on Smoking and Health
VND	Vietnamese currency unit (Vietnamese Dong)
VPHA	Vietnam Public Health Association
WES	Water and Environmental Sanitation
WHO	World Health Organisation
WHO-FCTC	WHO Framework Convention on Tobacco Control

Chapter 1 Introduction

1.1 Background information

Secondhand smoke (SHS) – also known as environmental tobacco smoke (ETS) – is tobacco smoke produced by smokers and inhaled by nonsmokers nearby. It is a source of widespread excess morbidity and mortality, imposing significant costs on non-smokers and society as a whole (US DHHS, 2006, WHO, 2009).

The literature shows that SHS is one among the causes of many known diseases or symptoms, such as chronic coughing, excessive phlegm production, wheezing, chest discomfort, severe lower respiratory tract infections (bronchitis and pneumonia), eye and nose irritation, lung cancer, and low birth weight (US DHHS, 2006, US EPA, 1992, WHO, 1999, WHO, 2009).

Children's exposure to SHS is a well-known public health problem, with many children at particular risk from adults' smoking. Children are exposed to SHS involuntarily and often face detrimental health effects, including pneumonia and bronchitis, lung function deficit, coughing and wheezing, worsening of asthma, middle ear disease, and sudden infant death syndrome (SIDS) (Hill and Liang, 2008, US DHHS, 2006, WHO, 2009). Their main exposure environment is at home (WHO, 2009)

In Vietnam, tobacco smoking is very common in the general population, and is a problem in both urban and rural areas. According to the Ministry of Health of Vietnam (MOH) (2003), the prevalence of smoking among people aged 15 years and above in 2002 was 56.1% in men and 1.8% in women; in 2010, this had reduced to 47.4% and 1.4% in adult males and females respectively (MOH, 2010). The problem of smoking is not only related to the smoking rate, but also to the percentage of households polluted by people smoking inside the home. It was reported in various studies in different regions of Vietnam that the prevalence of children exposed to SHS ranged from 60% to 70%, depending on the regions where the studies were undertaken and on the ages of children (Hai et al., 2006, Huong et al., 2011, Minh et al., 2007, Nga and Ha, 2007, Suzuki et al., 2009).

Acknowledging the problem of SHS and children's health, research on this subject in Vietnam has been on the increase. A small study conducted in Bac Giang province on the

association between SHS and child respiratory health showed a close relationship between the smoking status of a family member and the occurrence of seven selected respiratory symptoms among children under 6 years of age (Minh et al., 2007). Results from an intervention study conducted by the Vietnam Public Health Association (VPHA) and Health Bridge Canada from 2005 to 2007 on passive smoking and public acceptance of indoor smoking revealed that the prevalence of children's exposure to SHS decreased from 67.5% at the baseline survey to 47.7% post-intervention (Nga and Ha, 2007). Another intervention study in Cam Pha town (Quang Ninh province) from 2003 to 2005 showed that, by targeting male smokers through communication for behavioural impact (COMBI), the rate of indoor smoking was reduced from 96.6% to 87.4% (Hai et al., 2006). The results from the above studies showed that the proportion of children exposed to SHS at home was still relatively high after intervention, at about 50% (Nga and Ha, 2007), while more than 70% of children under 5 years of age in central Vietnam were living with smoker(s) (Suzuki et al., 2009), and 60% of children 8 to 11 years of age were living in the same house with smoker(s) (Huong et al., 2011).

Even though there are various sources of evidence regarding the association between SHS and respiratory diseases among children, research on knowledge, attitudes and practices (KAP) of Vietnamese children in relation to SHS is still lacking. However, children in Vietnam, especially at primary school age, may be influential in stopping their parents' smoking in their presence (Trang et al., 2006), and parents in Vietnam tend to listen to, learn from and share opinions with their children on different aspects of living (Xuan et al., 2013).

International interventions with children showed that, if children learn and understand a new health behaviour at school, they tend to apply that behaviour in their daily life without enforcement from health programmers or other adults (Greenberg et al., 2003). Furthermore, children can also communicate the health behaviours to other people, including their parents, their siblings, their peers and communities (Christensen, 2004, Onyango-Ouma et al., 2005). However, this is not the case for younger children. For example, children less than 8 years old are still limited in language development (Borgers et al., 2000). It is also difficult for these younger children to stay focused on an issue for a period of time, and therefore they can easily lose interest (Borgers et al., 2000). Children from 8 to 11 years of age, on the other hand, have longer attention spans, and therefore can help better in delivering an intervention program to adults (Borgers et al., 2000). An intervention study with primary school children in the north of Vietnam showed that children at the age of 6 could maintain healthy behaviours themselves, but were restricted in their ability to communicate healthy behaviours to their siblings and their parents, while children at the ages of 8 and 9 or older could communicate healthy behaviours to other members of their families (Xuan et al., 2013).

Obtaining high quality evidence on 8-to-11-year-old children's knowledge, attitudes and practices (KAP) in relation to preventing the harmful effects of SHS was one stage of implementing the trial intervention model 'Children Say No to Secondhand Smoke' in this study. The model is the basis for recruiting children as change agents in preventing their own exposure to SHS, providing an effective advocacy process against tobacco smoke in general and against SHS in particular in Vietnam.

1.2 Research aim and objectives

1.2.1 Research aim

The primary aim of this research was to provide a mechanism to create a home environment free from secondhand smoke for children by involving primary school children aged 8 to 11 as change agents to decrease the in-home smoking of their parents and hence their exposure to SHS at home.

1.2.2 Research objectives

The specific aims of the study were to:

1. explore children's self-reported exposure to SHS at home pre- and post-intervention
2. evaluate the pre- and post-intervention knowledge, attitudes and practices (KAP) of children aged from 8 to 11 years in relation to the harmful effects of SHS and the prevention of SHS exposure
3. assess the capacity of children to persuade adults not to smoke indoors in their own homes after the intervention
4. implement the intervention model 'Children Say No to Secondhand Smoke' in a district in the North of Vietnam and make suggestions for its improvement

1.3 Structure of the thesis

This thesis is divided into 7 chapters:

Chapter 1 (Introduction) has set the background and outlined the purpose of the study.

Chapter 2 (Literature Review and the Vietnamese Context) reviews the literature related to the definition of secondhand smoke, its composition, and its harmful effects on children's health. The chapter also provides background information on the SHS exposure among children elsewhere in the world and in Vietnam, while acknowledging the understanding of different target groups on the issue of SHS exposure and its harmful effects on children's health.

This chapter includes a review of international literature, mainly on studies in Africa and Asia, on children as change agents in different intervention programs. The reasons why children were used in such intervention programs are discussed.

In addition, this chapter presents background information on tobacco control activities and tobacco-related legislation in Vietnam. It briefly describes the use of tobacco and its burden on health and the economy in Vietnam; the context of how the tobacco control system works; and some of the achievements and challenges in tobacco control activities.

Another focus of this chapter is on outlining the primary education system in Vietnam, particularly the teaching of healthy practices in the primary curriculum. Basic information is provided on the age of admission to primary school, the duration of primary education, and the subjects studied. The topic of 'healthy practices' in different primary curriculum subjects such as Ethics, Nature and Society, and Sciences are reviewed. At the end of the chapter, four hypotheses of the study are stated.

Chapter 3 (Research Methods and the Pilot Study) outlines the mixed methods approach for the study, with the use of quasi-experimental design in combination with qualitative methods (focus group discussion and in-depth interview). The site location, time frame for data collection, major variables, data management and analysis is also detailed in this chapter. As the study involved primary school children, ethical considerations are discussed. A summary of the pilot study and its implication are presented.

Chapter 4 (Children's Exposure to Secondhand Smoke and Their Knowledge, Attitudes and Practices on Secondhand Smoke) reviews the pre- and post-intervention situations of the children in the study groups who lived with smokers. The chapter provides data on the prevalence of exposure of the children to SHS, as well as the smoking behaviours of adults (in relation to their smoking indoors or outdoors). Statistical analysis of pre- and post-intervention data is also presented.

This chapter also discusses the children's KAP in relation to the harmful effects of SHS on their health and the prevention of exposure to SHS at home. Any changes in the children's pre- and post-intervention KAP are also presented in this chapter and discussed in conjunction with qualitative data.

An important part of this chapter is to validate the effectiveness of the intervention program by applying binary logistic regression models. Three of the study hypotheses – 'After the intervention, the exposure of children to SHS will decrease significantly'; 'After the intervention, parents of children will significantly change their smoking pattern from inside the home to outdoors'; and 'After the intervention, children's KAP on SHS will have improved significantly' – were confirmed by the results of this chapter.

Chapter 5 (Children as Change Agents Influencing Smokers not to Smoke in the Home) reviews the capacity of children to persuade parents who are smokers (mainly fathers) and other adult smokers in their home to smoke outdoors. The risks that children might face during the negotiation with smokers at home are also detailed. Data on teachers' perceptions, parents' perceptions, and children's perceptions of the capacity of children as change agents in the negotiation is integrated into development of a coherent 'Children Say No to Secondhand Smoke' model, in which children seek to modify the smoking habits of adults inside the family home. The last hypothesis of the study - 'After the intervention, the children's capacity to persuade adults not to smoke inside the home will be confirmed' – was accepted in this chapter.

Chapter 6 ('Children Say No to Sencondhand Smoke' – Implementing the Intervention Model) describes the activities undertaken during the intervention. The hierarchy of the intervention program from the district level to the primary school level is outlined. Suggestions from the study participants for improvement and expansion of the intervention are also presented.

Chapter 7 (General discussions and conclusions) discusses the main research findings. Strengths, limitations and implications of the study are also discussed. Conclusions and directions for future research are presented.

Chapter 2 Literature review and the Vietnamese context

2.1 The harmful health effects of secondhand smoke

2.1.1 Secondhand smoke: definition and composition

Secondhand smoke (SHS) or environmental tobacco smoke (ETS) is composed of sidestream smoke (SS) – the smoke from a burning cigarette or other burning tobacco products – and mainstream smoke (MS) from smokers' exhalation (US DHHS, 2006, US DHHS, 2007).

SHS is a mixture of toxic chemical compounds. The US Department of Health and Human Services (US DHHS) stated that there are more than 7,000 chemicals and compounds in SHS, of which hundreds are toxic to human health, and 69 are human carcinogens. This organisation also confirmed that there is no safe level of exposure to SHS (US DHHS, 2010).

Sidestream smoke and mainstream smoke

SS is the major component of SHS (US DHHS, 2006, US DHHS, 2007, US EPA, 1992, WHO, 2009). According to Witschi et al. (1997), SS accounts for 85% of SHS and the remaining 15% is MS. The main constituents of MS are nicotine, carbon monoxide and particulate matters, while the composition of SS is quantitatively different, and richer in certain carcinogens. According to IARC (2004) and the US Environmental Protection Agency (EPA) (1992), the qualitative composition of the components of SS and MS is similar. However, SS is considered to be three to four times more toxic than MS (Schick and Glantz, 2006). One of the reasons for the lower toxicity of MS compared to SS is that MS has been inhaled by smokers and parts of the nicotine, carbon monoxide and particulate matter have been retained and absorbed by the lungs of smokers (Schick and Glantz, 2006, Witschi et al., 1997). According to the reviews by the DHHS (2006, 2007), the levels of some compounds, such as carcinogenic polycyclic aromatic hydrocarbons (PAHs), are approximately 10 times higher in SS than MS. Daher et al. (2010) reported that the main chemical composition of SS consists of PAHs, volatile aldehydes and carbon monoxide, while according to other authors, a large percentage of SS consists of oils and waxes emitted as small particles (Schick and Glantz, 2006). SS when just generated is called 'fresh SS'; SS that has lingered in the air for about 1.5 to 2.0 hours is called 'ageing SS'. Ageing SS is estimated two to four times more toxic than fresh SS (Schick and Glantz, 2006).

According to the EPA (1992), the carcinogenic compounds found in SS are nearly all found in MS. However, when analysing the chemical composition of SS and MS, the EPA (1992) also discovered that five known human carcinogens, nine probable human carcinogens, three other animal carcinogens and several toxic agents are at higher levels in SS than MS. Researchers discovered that SS and MS also contain the nitro pesticides flumetralin, pendimethalin and trifluralin. All three pesticides are known to be harmful to human health and to be possible human carcinogens (Dane et al., 2006). Hecht and Hoffmann (1988) stated that tobacco-specific nitrosamines in MS such as N-nitrosonornicotine (NNN) and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) cause malignant tumours. Hecht (1998) showed that NNN causes tumours in the oesophagus and nasal cavity in rats, while NNK facilitates the development of lung tumours in rodents such as rats, mice and hamsters. Based on the review of 30 studies from 8 different countries and many other plausible publications, EPA (1992) concluded that SHS is considered a Group A (known human) carcinogen.

2.1.2 Toxicology of SHS

Experimental toxicology of SHS or ETS assists scientists to explore its toxicity mechanism in laboratory animals. The toxicity of SHS on the different organs of laboratory animals has been studied for many years, mainly on rats, mice and hamsters (Witschi et al., 1997).

One issue that gained substantial attention of toxicologists is SHS-related carcinogenesis in exposed laboratory animals. Certain animal species were exposed to SHS in long-term inhalation studies to determine potential carcinogenic development. Results from different experimental studies showed that SS could produce lung tumours in laboratory animals (Witschi et al., 1997), and that SS condensates were more likely to cause skin tumours in mice than MS condensates (Mohtashamipur et al., 1990). Another study showed that pulmonary tumours developed in young adult mice (strain A/J) exposed to SHS for 6 months. The development of lung tumours was also observed in the control group, but the incidence of lung tumours in the exposed group was double that in the non-exposed group (Witschi et al., 2006). Lung tumours were also observed in A/J strain mice exposed to SHS for 5 months and then allowed 4 ‘SHS-free’ months for recovery (Witschi, 2005).

SHS is considered to affect the development of male germ cells. A study conducted by Polyzos et al. (2009) in laboratory mice showed that male mice’s sperm were affected by both SS and MS. Sperm mobility and fertilisation rates were reduced by SS, while DNA strand breaks in sperm, reduced fertilisation, and reduced speed of early embryonic maturation were induced by MS.

It was also concluded that both MS and SS exposure led to abnormalities in sperm chromatin structure in experimental mice (Polyzos et al., 2009).

In addition, a range of studies on SHS toxicology indicated that SS can have profound effects, for example, on different organs of experimental animals, such as pulmonary and reproductive organs and respiratory tracts (Witschi et al., 1997, Schick and Glantz, 2006, Witschi et al., 2006, Hecht, 1998); on foetuses and newborns (Witschi et al., 1997); decreased preantral follicular development and survival in laboratory rats (Sadeu and Foster, 2011). Husgafvel-Pursiainen (2004) also found in his review that the exposure of rodents to SS or MS cause single DNA single strand break, aromatic adducts and oxidative damage to DNA.

2.1.3 Biomarkers of exposure to SHS

In the past, indicators used for measuring a nonsmoker's exposure to SHS included the estimated number of hours per day of exposure to SHS. However, this measurement was imprecise, because the exposure of an individual to SHS depended on multiple factors, such as the ventilation of an indoor place, the number of cigarettes that smokers smoked per day, other environmental conditions, and the individual sensitiveness of the nonsmokers. In order to measure nonsmokers' exposure to SHS more precisely, biomarkers are used for quantitative analysis, thus anticipating possible health risks that may happen to exposed people (Benowitz, 1999).

A literature review by the US DHHS (2010) showed that various biomarkers had been suggested for the measurement of nonsmokers' exposure to SHS, including chemicals and metabolic products in the breath. Many other biomarkers have been suggested, including benzene, and 1-3 butadiene in the breath (Benowitz, 1999). However, these biomarkers were considered not specific and not sensitive enough to measure SHS exposure because there were various sources of these compounds other than SHS (Benowitz, 1999), and their levels could be affected by other factors, such as individual diet and occupation, and certain environmental factors (US DHHS, 2010).

Cotinine and nicotine are the two biomarkers considered the better solutions for quantifying, with high sensitivity and high specificity, SHS exposure among the nonsmoking population. They reflect the exposure to nicotine, which is unlikely to come from any source other than SHS. Nicotine has a short half-life (two to three hours) in the blood and is excreted in urine. Levels can vary, depending on the sampling time, and the most reliable results are obtained from hair samples (Nafstad et al., 1995, Florescu et al., 2009). Cotinine has longer half-life in body fluids (fifteen to nineteen hours), and can be measured in an individual's urine, saliva, plasma (from a blood

sample), or hair, and its constituents are relatively stable in blood (Benowitz, 1996, Florescu et al., 2009). Due to its stability and its capacity for quantifying individual long-term exposure to SHS, cotinine has become the most preferred biomarker of SHS exposure, and hair samples are the most preferred sources for measuring cotinine (Florescu et al., 2009).

2.1.4 Harmful effects of SHS on adult and child health

Harmful effects of SHS harmful on adult health

The exposure of children and other nonsmokers to SHS is involuntary exposure; similarly inhalation of SHS by nonsmokers is involuntary, and termed 'involuntary smoking' or 'passive smoking' (EPA (1992), DHHS (2007, 2006).

Because of the high toxicity of SHS, no level of SHS exposure is considered safe (WHO, 2009). Exposure to SHS in very small amounts and in a very short time can pose a risk to human health (US DHHS, 2006). Nonsmoking adults may face detrimental health effects (including lung cancer, respiratory symptoms and diseases, lung function deficits, chronic obstructive pulmonary disease (COPD) and cardiovascular diseases) when they inhale the air polluted by tobacco smoke (CDC, 2013, US DHHS, 2006, US EPA, 1992, WHO, 2009).

Harmful effects of SHS on child health

The adverse health effects of SHS exposure on children include middle ear disease; lower respiratory tract infections (mainly pneumonia and bronchitis); respiratory symptoms such as coughing, wheezing, phlegm, breathlessness and worsening of asthma; reduced lung function; and the risk of sudden infant death syndrome (SIDS) (CDC, 2013, NCI, 1999, US DHHS, 2006, US DHHS, 2007, WHO, 2009). In addition, SHS is considered to cause problems in children's cognitive development and behavioural development, and to be related to childhood cancer and other health problems. However, there is insufficient scientific evidence to demonstrate a causal relationship between exposure to ETS and these problems (US DHHS, 2006, US DHHS, 2007). Howerver, this section only focuses on the known associations between exposure to SHS and children's health problems.

Middle ear disease

There is scientific evidence that shows the association between exposure to parental smoking and middle ear disease in children. Scientists began to research the causal relationship between children's exposure to SHS at home and the risk of otitis media (OM) and otitis media with

effusion (OME) a long time ago (Kraemer et al., 1983). In the 1990s a report by the EPA (1992) noted causal links between tobacco smoke exposure and diseases of the ear, nose, and throat. A systematic quantitative review by Strachan and Cook (1998) showed that parental smoking was likely to be causally associated with both acute and chronic middle ear diseases among children; and that middle ear disease was 20 to 50% more frequent among children exposed to SHS. A study conducted in a hospital in Helsinki, Finland, of children 1 to 4 years of age between March 2001 and December 2002 showed that children exposed to SHS had a four-fold risk of recurrent acute OM after tympanostomy, compared to those who were not exposed to SHS (Hammarén-Malmi et al., 2007).

In a 1999 report based on the results of more than 40 studies with different design approaches, the WHO concluded that SHS exposure is a cause of both acute and chronic middle ear disease in children (WHO, 1999). Such conclusions were again confirmed in reports issued by the US Surgeon General in 2006 and 2007 (US DHHS, 2006, US DHHS, 2007).

Lower respiratory tract infections

The likelihood of a causal association between exposure to SHS and lower respiratory tract infections (LRTIs) in children – including bronchitis and pneumonia, especially in infancy and early childhood – has been addressed by many researchers for decades, as noted in reviews by the US EPA (1992), the National Cancer Institute (NCI, 1999), the DHHS (2006) and the California Environmental Protection Agency (OEHHA Cal/ EPA, 2006).

Many studies have shown that the adverse effects of SHS exposure on the respiratory tracts of children are strongest in the first two years of life (Kwok et al., 2008, Hofhuis et al., 2003, Lam et al., 2001, Håberg et al., 2007), and that child exposure to SHS in early life contributes to a higher risk of serious morbidity from respiratory infections (Kwok et al., 2008). A case-control study in Turkey indicates that children with a more severe exposure to SHS had a higher risk of LRTI than non-ETS-exposed children (Keskinoglu et al., 2007).

In a publication by Britton (2010), it was shown that children who had to inhale SHS from their mothers had a 60% higher risk of LRTI, while children who were exposed to SHS in the home by other family members who smoked had more than a 50% higher risk of LRTI. A study in south central Vietnam in 2006 showed that SHS exposure among children under 5 years of age contributed to 28.7% of childhood pneumonia among that age group in the study; it was concluded that exposure to SHS among children under 5 years of age was the cause of 44,000 excess hospital admissions due to pneumonia in Vietnam (Suzuki et al., 2009). A recent publication in Thailand

revealed that children exposed to SHS had 4 times higher a risk of developing acute lower respiratory illness compared to non-exposed groups (Charoenca et al., 2013).

In the reports in 2006 and 2007 (US DHHS, 2006, US DHHS, 2007), the US Surgeon General concluded that there was enough scientific evidence to infer a causal relationship between child exposure to SHS by parental smoking and lower respiratory illnesses, especially in young children, and the risk of experiencing LRTIs was highest from maternal smoking.

Respiratory symptoms and the worsening of asthma

This section focuses on respiratory symptoms, such as cough, phlegm, wheezing and breathlessness, and the exacerbation of asthma experienced by children who are exposed to SHS. On the basis of the review of many studies and articles, the DHHS concluded that there is a causal relationship between parental smoking and the above respiratory symptoms in school-age children (US DHHS, 2006, US DHHS, 2007). Reports by the WHO (1999, 2010) also confirmed this conclusion.

Researchers around the world have identified a causal relationship between childhood respiratory diseases and SHS. For example, Polish researchers studying a population of more than 1,100 children aged 13 to 15 found that children's exposure to maternal smoking was a risk factor for wheezing, and that some environmental factors, including in-home tobacco smoke, were responsible for detrimental respiratory health effects (Kasznia-Kocot et al., 2010). Britton (2010) found that children of all ages face a higher risk of wheezing when exposed to SHS.

A publication about the adverse health effects of tobacco smoke on children's health in Taiwan showed that children exposed to SHS face a higher risk of active asthma, wheezing and bronchitis (Tsai et al., 2010). This study also found that children's exposure to maternal/parental smoking was associated with an increase in the prevalence of wheezing, asthma and chronic coughing (Tsai et al., 2010).

An Italian study of 4,122 children in 29 primary schools in 2004–2005 showed that the prevalence of wheezing and current asthma among children exposed to parental smoking was nearly double that of the non-exposed group. Maternal smoking was a risk for persistent coughing and phlegm among children. The results indicated a causal relationship between the exposure to SHS and the development of several respiratory symptoms in children such as coughing, wheezing, phlegm, and asthma (Pirastu et al., 2009).

The exposure to SHS during childhood and its association with the development of coughing, phlegm, wheezing and the increased severity of asthma has also been ascertained by many other researchers in recent times (Dong et al., 2007, Guang-Hui et al., 2008, Qian et al., 2004, Wahlgren et al., 2000, Schwartz et al., 2000).

Lung function deficit

According to the DHHS (2007, 2006), in utero exposure to SHS from maternal smoking is a cause of decreased lung function in children, as is exposure to SHS after birth. Lung function is measured using parameters such as forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and forced expiratory flow rate (FEF) at 25%, 50% and 75% (FEF25, FEF50 and FEF75) (US DHHS, 2006, US EPA, 1992, WHO, 2009).

Breton et al. (2009) conducted research with more than 2,100 children in southern California, measuring their FVC and FEV1, and found a significant relationship between maternal smoking during pregnancy and decreased FEV1 and FVC. In a study in nine countries in Europe and North America involving 20,000 children from 6 to 12 years of age, maternal smoking during pregnancy was found to cause a decline in several lung function parameters, including a 1% decrease in FEV1 and a 6% decrease in MEF25 (maximal expiratory flow at 25% of vital capacity left). The study also indicated that postnatal exposure to SHS was less important in lung function deficit, but still contributed to lower lung function in currently exposed children (Moshammer et al., 2006). A study in Greece with the participation of nearly 600 children aged 5 to 14 showed that children exposed to SHS had lower lung function, with decreased values of FEV1 and FEF50 (Chatzimicael et al., 2008). Rinne et al. (2006) also found in their research that children exposed to gases and fumes resulting from biomass fuel and SHS had lower FVC and FEV1.

Risk of sudden infant death syndrome

Sudden infant death syndrome (SIDS) is defined as ‘the sudden unexplained death of an infant younger than one year of age’ (Moon and Fu, 2007). SIDS victims have been healthy before death, and the reason for SIDS still remains unexplained by clinical or autopsy evidence (Moon and Fu, 2007, Hawamdeh et al., 2003). However, the association of prenatal and postnatal exposure to SHS with the risk of SIDS has been confirmed by WHO (1999, 2010) and the US DHHS (2007, 2006). According to the DHHS (2007), existing evidence is sufficient to infer a causal relationship between exposure to secondhand smoke and sudden infant death syndrome. Not only the evidence reviewed by the DHHS, but many other articles also contributed to this conclusion, and some examples are cited below.

A study in the Syrian Arab Republic on the detrimental effects of SHS exposure on child health found a significant association between SIDS and parental smoking (Maziak et al., 1999). In their own systematic review article, Dybing and Sanner (1999) concluded that pre- and postnatal exposure to SHS contributed strongly to the risk of SIDS in young children. Hawamdeh et al. (2003) in a review of articles, scientific reports and other materials on the detrimental impacts of passive smoking on children's health, including SIDS, found that exposure of the foetus resulting from the mother smoking during pregnancy was one of the important risk factors for SIDS. This was also confirmed in a study conducted in Poland (Zakrzewski et al., 2005). Several other articles and reviews support the causal association between prenatal and postnatal exposure to SHS and the increased risk of SIDS (DiFranza et al., 2004, Hofhuis et al., 2003). The California EPA, in its review, concluded that approximately 10% of SIDS deaths were attributable to SHS exposure (OEHHA Cal/ EPA, 2006).

2.2 The prevalence of children's exposure to secondhand smoke

2.2.1 The prevalence of children's exposure to SHS internationally

It has been revealed by many reports throughout the world that the prevalence of children's exposure to SHS has remained high, despite various attempts in many countries to reduce exposure.

The US Centre for Disease Prevention and Control (CDC) (2008) estimated that approximately 43% of children 13 to 15 years of age worldwide were exposed to SHS daily. A recent publication based on the data from 192 countries showed that around 40% of children in the world were exposed to SHS in the year 2004 (Oberg et al., 2011) while WHO (2010) estimated that around half the children in the world (approximately 700 million) were exposed to SHS.

According to the DHHS (2007), nearly 60% of children aged 3 to 11 were exposed to SHS in the United States alone. However, another study in America showed that the percentage of US children exposed to SHS ranged from 35% to 80% and the difference in these percentages depended upon the method of measurement and the populations studied (Kum-Nji et al., 2006). The exposure to SHS among children may be related to household income and parents' educational level, with higher exposure found among children living in low-income households (King et al., 2009), having parents with a low level of education (Radic et al., 2011), and having fathers with a low level of education and less qualified occupation (Constant et al., 2011). The percentage of children who live in apartments in multi-unit housing and are exposed to SHS was very high, up to 73%, and the

cotinine level in these children was 45% higher than those who lived in detached houses (Wilson et al., 2011).

A recent publication in the US showed that, although the exposure to SHS among children had declined in recent years, the percentage of children living with asthma and who were exposed to SHS was still high at 53.2% in the period 2005–2010, and a higher percentage of those in the low income group were exposed than their higher income counterparts (Kit et al., 2013). The US CDC (2013) stated that the exposure to SHS among both nonsmoking adults and children regularly declined in the United States. During the 20-year period from 1988 to 2008, the prevalence of SHS exposure among the nonsmoking population in the US decreased more than 2 times. Reasons for this reduction in SHS exposure included the enactment of legislation banning smoking in workplaces and public places, the increase in the number of households maintaining a smoke-free home, and the decline in the rate of adult and youth smoking in the US. However, the CDC emphasised that US children were still at risk of SHS exposure, with 53.6% young children (aged 3 to 11) were exposed to SHS during the period 2007–2008 (CDC, 2013).

A study in Australia found that 27% of infants had detectable levels of urinary cotinine, and the exposure of infants to SHS was significantly associated with several factors, such as the presence and the smoking status of household smokers, and smoking inside the home (Daly et al., 2010). It was also estimated that approximately 300,000 children 14 years of age and under were exposed to SHS at home in the year 2007 in Australia, but the exposure among children and the nonsmoking population generally was reported to decline in association with substantial efforts to reduce tobacco use and passive smoking (Australian Institute of Health and Welfare, 2008).

In Europe, a study in Germany during the period 2003–2006 showed that approximately 50% of German children aged 3 to 14 lived with smoker(s), and there was no decrease in SHS exposure among children over the previous 15 years, despite efforts to reduce children's exposure to SHS (Conrad et al., 2010).

A study conducted in three countries in South-East Asia (Thailand, the Philippines, and Singapore) showed that the prevalence of passive smoking in infants ranged from 50% to 70% (Ostrea et al., 2008), while the prevalence of preschool children in Taiwan exposed to SHS was approximately 50% (Lin et al., 2010). Another study in Cambodia in 2003, using the Global Youth Tobacco Surveillance (GYTS) questionnaire, showed that 67% of adolescents aged 13 to 15 were exposed to SHS at home and in other places. This study also revealed that adolescents who lived with one or more smoking parents had three times the risk of being exposed to SHS (Rudatsikira et

al., 2010). In Malaysia, a study of school children 10 to 11 years old in 2009 revealed that 52.9% lived with at least one smoker, and children who lived with smoker(s) had higher salivary cotinine levels than their counterparts living in nonsmoking households; the salivary cotinine concentrations increased among children living with more than one smoker; and the concentrations were highest among those with both parents who were smokers (Abidin et al., 2011).

In the GYTS conducted during the period 2000–2007, it was reported that the prevalence of children aged 13 to 15 years exposed to SHS in the world was 43.0% and varied by regions: 27.6% in Africa, 34.3% in South-East Asia, 50.6% in the Western Pacific, and up to 77.8% in Europe (Warren et al., 2008).

In conclusion, although there have been many efforts to control tobacco smoking and to keep the air free from tobacco smoke for the nonsmoking population, the prevalence of children exposed to SHS is still high. Children can be involuntarily exposed to SHS in many environments, but the main environment of SHS exposure for children was in the home, where children had to inhale tobacco smoke from their parents or other smokers (WHO, 2009).

2.2.2 The WHO Framework Convention on Tobacco Control

To encourage tobacco control activities worldwide and contribute to the control of involuntary exposure to SHS, the WHO Framework Convention on Tobacco Control (WHO-FCTC), an international treaty that includes specific obligations to protect public health policies from any interference by the tobacco industry, was adopted by WHO (WHO, 2003). This convention has a wide focus, with Article 8 (Part III) focusing on the protection of people from exposure to tobacco smoke. Article 8 required all parties that signed the convention to adopt and implement policies, including legislation, to protect nonsmokers from exposure to SHS in workplaces, on public transport, in indoor public places and in other public places if possible (WHO, 2003).

Many countries in the world have adopted this convention, including Vietnam. Up to now, 168 countries have signed the Convention (WHO FCTC, 2013). Upon signing the convention, under Article 8, parties should have policies and/or legislation to guide the implementation of policy on smoke-free public places, workplaces, etc. to ensure that the percentage of SHS exposure is decreased among the nonsmoking population (WHO, 2003). With the progress in worldwide efforts on tobacco control, including the protection of nonsmokers from exposure to SHS, the WHO (2009) stated that ‘154 million people, mostly in low- and middle-income countries, became newly covered by comprehensive smoke-free laws in 2008’. It was reported by the WHO that smoke-free

policies adopted worldwide had decreased the exposure to SHS by 80% to 90% in high-exposure settings. The report also showed that the urinary cotinine levels in bar workers had decreased 3 times after comprehensive smoke-free legislation was adopted in Canada (WHO, 2009).

Other major achievements have been reported by the WHO. In the year 2011, 739 million people throughout the world were protected by national smoke-free laws, with an increase of 385 million people from the year 2008. An additional 210 million people were protected by comprehensive smoke-free policies and legislation at sub-national scale. This number was approximately 100 million greater than the number of people protected in the year 2008 (WHO, 2011b).

2.2.3 Children's exposure to SHS in Vietnam

Vietnam signed the FCTC on 8 August 2003 and ratified it on 17 December 2004, becoming the 47th party to do so (Prime Minister Office of Vietnam, 2009). Since then, there have been many efforts in Vietnam to combat tobacco use and passive smoking among the nonsmoking population, of which two of the greatest achievements were Resolution 1315/QD-TTg of the Prime Minister on 21 August 2009 on Approval of the Plan on the Implementation of the WHO FCTC (Prime Minister Office of Vietnam, 2009), and more recently the Law on Tobacco Control which was passed by the National Assembly of Vietnam in June 2012 (The National Assembly of Vietnam, 2012). These two documents focus on various aspects of tobacco control, including the protection of people from tobacco smoke in public places.

Despite the government's attempts to protect people from SHS exposure, children's exposure to SHS, though improved, is still high, especially in rural areas. According to an assessment based on the National Health Survey in 2002, the percentage of children under 5 years of age living in a household environment polluted by tobacco smoke was 71.7% (MOH, 2003). Results from another study focused on adolescents from 13 to 15 years of age and showed that the percentage of these adolescents exposed to SHS at home ranged from 52 to 65%, while the percentage exposed to SHS in public places was 86 to 90% (Kinh et al., 2004). Wilpfi et al. (2009) indicated that 63% of households in a province in the Delta Region of Vietnam had one smoker and 17% households had at least 2 smokers; and 97% of smokers often smoked inside their homes, while 87% often smoke in children's vicinity.

After the ratification of the WHO FCTC, the situation seemed to improve, with a slight decrease in exposure to SHS among children at home. A small case-control study in 2007 in Bac Giang province, 60 km north-east from Hanoi, showed that the percentage of children under 6 years

of age exposed to SHS in their homes was 64.8% (Minh et al., 2007). This figure was similar to the results of other surveys conducted in other provinces. For example, the percentage of children under 5 years of age in the central region of Vietnam living with smoker(s) in their homes was 70.5%. The results of this study also revealed that 63.5% children lived with 'indoor smokers' and 51.8% of children had 'parental smokers' (Suzuki et al., 2009).

Hai et al. (2006) found in their intervention study in Quang Ninh province that children's urinary cotinine concentrations decreased nearly two times, from 3,089 µg/L before the intervention to 1,538 µg/L after the intervention, and the percentage of households free from tobacco smoke significantly increased from 3.4 to 12.6%. The percentage of men who smoked in the home decreased from 96.6% to 87.4%. Another intervention study on the social acceptability of smoking in Vietnam showed that smoking at home decreased after the intervention. After the intervention, the percentage of men who never smoked in their living rooms increased from 12.5% to 16.6%, while the percentage never smoking in their dining rooms also increased from 50.2% to 56.9%, and the percentage never smoking in their bedrooms increased from 69.0% to 74.0%. All these differences were statistically significant. These results led to a reduction in children's exposure to SHS at home from 67.5% to 47.7% (Nga and Ha, 2007).

Not much information was available on SHS exposure among children of primary school age. The pilot study conducted by the author of this thesis in a primary school in a semi-rural area of Hanoi[1], revealed that 60.0% of school children aged 8 to 11 years live with smokers, with 48.7% living with one smoker and 11.3% living with at least two smokers. Smoking in the home was common in the community, regardless of the presence of children, with some fathers still smoking while holding babies (Huong et al., 2011).

2.3 Community awareness and attitudes toward SHS

During the past 10 to 15 years, there has been a considerable amount of research throughout the world on community awareness of the harmful effects of SHS exposure on children's health.

A small study conducted with women in African immigrant communities in Minnesota, USA, showed that many participants had a general understanding about the harmful health effects of SHS, but some were unsure. The authors suggested that their awareness about this issue should be enhanced (Dillon and Chase, 2010). A community-based survey in Indonesia showed that both

[1] Hanoi is the Capital City of Vietnam, which includes both urban and rural areas in its own area.

participating men and women had a relatively high understanding of the general health impacts of SHS on children's and adult health. The proportion of women who supported the idea of smoke-free homes was seen as promising (Nichter et al., 2010).

Lin et al. (2010) found that Taiwanese mothers with a high level of education tended to have a better understanding of the harmful effects of SHS on children's health and better attitudes to SHS. They often took their children away from smoking places to prevent their exposure to SHS. A study in New York (USA) showed that parents of children with chronic respiratory conditions such as asthma tended to have better knowledge, attitudes and practices related to SHS exposure (Halterman et al., 2010). Women, light to moderate smokers, and adults below 35 years, people with high income and a high educational level had better attitudes toward smoking outdoors compared to men, heavy smokers, those older than 35 years and those with a low income and low educational level (McCarthy, 2001).

Reports from the Australian Institute of Health and Welfare showed that 92% of nonsmokers perceived that SHS might affect the health of the nonsmoking population, while only 73% of smokers shared the same belief (Australian Institute of Health and Welfare, 2006). In another report in 2010, the Australian Institute of Health and Welfare also reported that 38% of nonsmokers thought that SHS might cause pneumonia in children, while this percentage among smokers were 33%; 37% of nonsmoking participants and 30% of smokers recognised that SHS might cause SIDS among children; and 13% of each group recognised the impact of SHS on middle ear infections in children (Australian Institute of Health and Welfare, 2011).

In Vietnam, the understanding of adults on the issue of passive smoking has remained limited, although some community interventions have shown certain improvements in their awareness of the harmful effects of SHS on children's health. The intervention study by Nga and Ha (2007) revealed that almost all men and women participating in the study were aware that SHS was very harmful or harmful to children's health, and the percentage of men and women recognising acute respiratory infections as one of the detrimental health effects of SHS on children increased significantly after the intervention. However, the proportions of men and women who could name some other specific adverse health effects of SHS on children, such as middle ear diseases or asthma, were low and no significant difference was recorded between pre- and post-intervention surveys. The study also showed that female participants had positive attitudes against passive smoking at home (Nga and Ha, 2007). Another community-based intervention conducted in Cam Pha town, Quang Ninh province (Hai et al., 2006), showed that, before the intervention, 13.1% of adults answered that passive smoking was not harmful to nonsmoking population, while 25.0%

did not know if SHS was harmful to nonsmokers or not. However, the intervention showed promising results for the prevalence of adults admitting that SHS was harmful to the health of the nonsmoking population, with children as a vulnerable group; and greatly appreciating a home environment free from tobacco smoke. The MOH of Vietnam reported that 82.2% of smokers and 88.5% of nonsmokers believed that inhalation of SHS could cause serious illnesses in nonsmokers, especially children, but they could not name key symptoms or diseases that SHS could cause to passive smokers (MOH, 2010).

The pilot study conducted by Huong et al. (2011) in a rural district of Hanoi (Vietnam) showed that most primary school children believed that SHS was harmful to their health (87.0%). Many of them could recognise typical respiratory symptoms caused by SHS, such as coughing, wheezing, breathlessness, sputum. However, none of the study children could list any of the typical diseases caused by SHS, such as pneumonia, bronchitis, and asthma. Parents of these children had limited awareness of the symptoms and diseases caused by SHS among exposed children, although they all agreed that SHS was harmful to their offspring. Primary school teachers showed a high level of understanding of the adverse health impacts of SHS on children's health. All the recruited children, parents and teachers in the study showed positive attitudes on the prevention of exposure to SHS for children (Huong et al., 2011).

2.4 Children as change agents in community-based and school-based interventions

2.4.1 Why are children invited to be involved in intervention programs as change agents?

Children's involvement in community-based intervention is not a new concept. Children have been invited to participate in many intervention programs in many countries throughout the world, in both community-based and school-based programs. These programs have mainly focused on diarrhoea prevention programs, sanitation programs, and some disease prevention programs, e.g. for malaria or dengue fever.

Many programs involving children as change agents have applied the child-to-child (CtC) approach, a concept initiated by a group of health professionals (including David C. Morley and Hugh Hawes) to prepare for the International Year of Child in 1979 (Child to Child, 2009). Initially, the CtC approach aimed to help children gain awareness and competency in health and hygiene activities and to apply the activities in their daily lives, and then to use them as change agents to communicate with other children and their siblings to extend the health and hygiene practices into

the daily lives of these children, and other family members and the community. The CtC approach then was gradually widened to include child-to-community and child-to-family approaches in various health intervention programs (Onyango-Ouma et al., 2005). The following matrix shows how a child or a group of children can communicate and participate in various health promotion programs that have been conducted by the Child-to-Child Trust Organization (Figure 2.1).

One child	- spreading knowledge to	- younger child/children
or	- teaching skills to	- a same-aged child/children
A group of children	- demonstrating by example to - working together with	- a family/families - the community

Figure 2.1 The child-to-child matrix shows how a child or children can participate in health and development programs. Source: Child to Child (2013).

The concept of CtC suggested that children can communicate and work or collaborate with others, including their classmates, their peers, their families or others in their communities to resolve health problems (Onyango-Ouma et al., 2005), and parents support them in their role of change agent or health educator (Mwanga et al., 2007, Alwan et al., 2011, Siddiqi et al., 2010), and include them in some contexts of decision making in their families (Pridmore, 2003).

As early as 1980s, Rohde and Sadjimin (1980) recruited children as change agents in a diarrhoea prevention program in Indonesia. Children were considered effective transmitters of information obtained from schools to their family members, and therefore contributed to change in knowledge and attitudes, as well as providing new skills in the community. The authors concluded that in semiliterate societies, such as rural areas, children might be considered as the educators of their families. The information they brought home was often regarded as specific, reliable and convincing, and therefore they could help expand primary health care activities to different targets in their homes and their communities (Rohde and Sadjimin, 1980).

Christensen (2004) introduced a conceptual framework for research involving children playing a key role in communicating with their families as health promoters (see Figure 2.2). Many other surrounding factors can contribute to their activities in such a role, e.g. schools, friends and peers, day care, health services, media, local community and consumers.

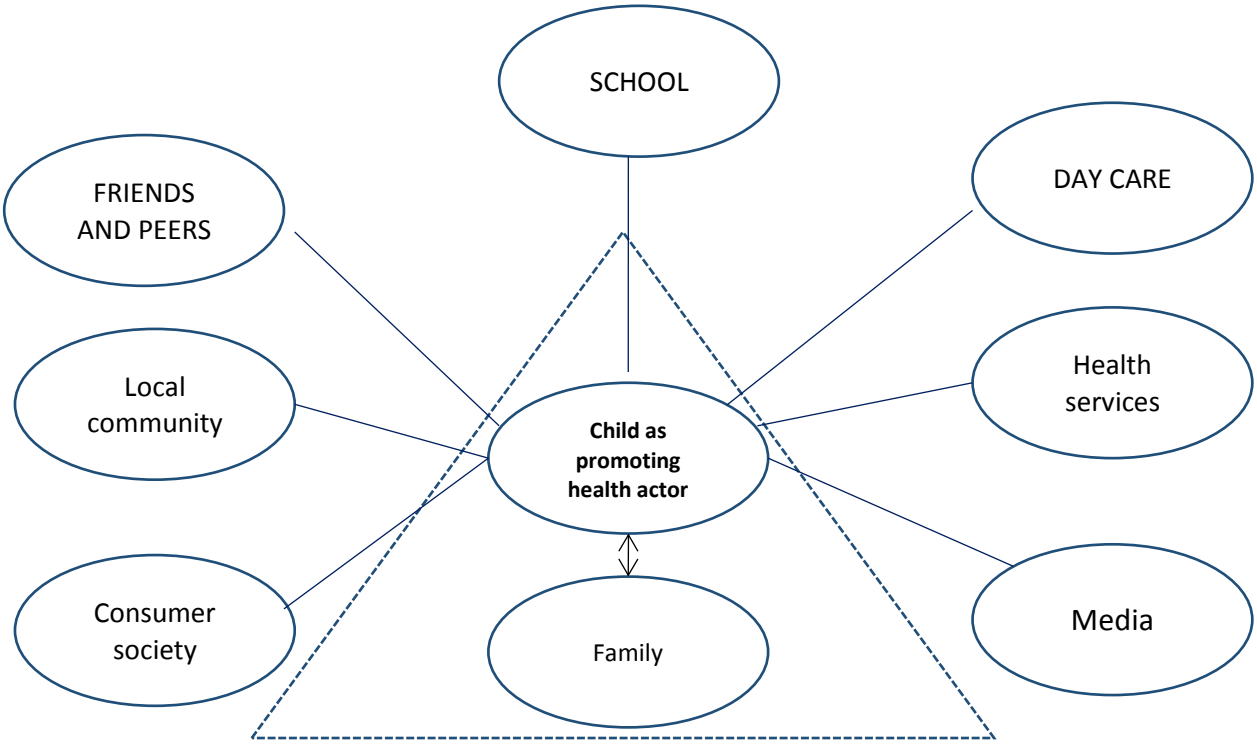


Figure 2.2 The social settings involved in children's development as health-promoting actors. Source: Christensen (2004).

Harpine (2008) reported that recruiting children in school-based intervention programs has the advantage that group interventions can partially help children and teens to share their knowledge and skills in class, which helps them to initiate and to form decisions wisely. Children show positive attitudes to learning new concepts, and adapt to new behavioural changes more easily than adults. Problem-solving and decision making skills can be developed based on group intervention programs (Harpine, 2008).

Implementing school-based intervention programs provides several advantages, because schools bring large number of children together and can facilitate implemented programs efficiently (Bowen et al., 2007). Primary school children are often particularly receptive to the education that they received during their first years of study, including health education (Bowen et al., 2007). After learning a new health behaviour at school, they tend to apply that behaviour in their daily life without enforcement from health workers or other adults (Greenberg et al., 2003). In the community, children are considered to be key agents for changing and promoting health behaviours, such as helping to increase hand washing practices among their parents and siblings, or even influencing parental decisions on establishing sanitary facilities, and boiling or filtering water before use (Onyango-Ouma et al., 2005).

2.4.2 Children as change agents in intervention programs internationally

Children at different ages, including both primary and secondary school children, have been involved in interventions and programs as change agents, mainly in developing countries in Africa and Asia. These interventions and programs have mainly focused on sanitation, diarrhoea, and some other types of preventable diseases, such as malaria and dengue fever. Only a few recent studies have focused on tobacco control.

As mentioned in the previous section, children were invited to participate in a diarrhoea prevention program in Indonesia more than 30 years ago, and the program was considered successful in transferring health messages to their families (Rohde and Sadjimin, 1980). In a dengue fever intervention program in Puerto Rio from 1986 to 1995, primary school children were involved in one of the four components of the program (Winch et al., 2002). Children participated in activities inside and outside the classroom, including pictures, games that highlighted mosquitoes and their breeding habits and breeding sites, and the danger of dengue fever to public health. Children were considered as the primary change agents to transfer what they learned about dengue prevention from school to their parents, through communicating and sharing the information about the harmful effects of dengue on human health, and dengue prevention methods. They searched for *Aedes aegypti* larval habitats and pointed these out to their parents for destruction, or helped their parents destroy these habitats. At the conclusion of the intervention, it was shown that children's knowledge of dengue and dengue prevention had increased. Though parental knowledge on dengue and dengue prevention was not measured, it seemed that children could help to improve their parents' practices in relation to dengue prevention; for example there was a significant decrease in the Breteau Index (a key indicator in dengue prevention), with an increased proportion of water storage containers protected from mosquitoes, and fewer other potential mosquito habitats available (Winch et al., 2002).

In an intervention program on hand washing in primary schools in China, after attending sessions delivered by their teachers, children were told to apply hygiene practices at school and at home, and to take home a hygiene toolkit to their parents (Bowen et al., 2007). In the intervention group, children's households with sanitation facilities were significantly more common after the intervention than in the control group, and a high percentage of children's parents confirmed their receipt of the children's take-home toolkit (Bowen et al., 2007). In such programs, children were considered an important agent of change in promoting healthy activities to their peers in relation to hand washing (Rohde and Sadjimin, 1980), and for increased hand washing by their siblings and their parents (Onyango-Ouma et al., 2005, Xuan et al., 2013).

In a quasi-experimental study in Kenya involving children as change agents, 40 primary school children were selected as health educators to influence their peers and their parents (both in knowledge and practices) on common health issues in their community, such as malaria, diarrhoea and hygiene. Results of the study revealed that children's parents and peers showed significant long-term improvement in their knowledge about the common issues communicated by the change-agent children. However, practical changes were more obvious among children rather than among parents. These results led to the conclusion that the change-agent children were more effective in promoting good health knowledge and practices to their peers rather than to adults; therefore it was suggested that children should learn health communication messages and pass these on to their friends and their peers (Onyango-Ouma et al., 2005).

In Nigeria, children were involved in a water and environmental sanitation (WES) project (Olayiwole et al., 2003). The project expected that, after children's knowledge, positive attitudes and skills on WES were enhanced, they would become the agents of positive hygiene behavioural changes among their peers in schools, in communities and in their homes. The results of the intervention project showed that improvements in sanitary conditions in households and in communities were achieved, and the roles of children as the change agents in promoting positive health practices were highly appreciated (Olayiwole et al., 2003).

The findings of a case study conducted in India (Mukhopadhyay and Bhatnagar, 2005) were similar to those of the Nigerian study. In the Indian study, school-aged children played the role of health promoters to educate their friends, their peers and others in the community about diarrhoea and other vaccine-preventable diseases. The results showed that the children were effective health communicators for behaviour changes in their communities, and that awareness on diarrhoea and some vaccine-preventable diseases among children, their family members and communities had improved significantly. Positive behavioural changes in relation to defecation and personal hygiene were recorded.

In an intervention in Zambia, children aged 11 and above were invited to participate in enhancing tuberculosis (TB) case finding (Bond et al., 2010). In this study, several activities were conducted in school settings, such as discussions, drawings, role plays and narratives. Children were required to discuss the TB symptoms with their parents or guardians at home. The results of the study revealed that children were keen to learn about tuberculosis and HIV/AIDS, and they enthusiastically discussed TB at home with their parents. Parents and guardians reacted positively to the children's communication about TB, and children were encouraged by their parents to share

the information with other people in their community, especially with their peers (Bond et al., 2010).

Recently, children were also invited to play a role in tobacco control programs in several countries. There were two interventions with the same approach, one conducted in the United Kingdom (Alwan et al., 2011) and one in Pakistan (Siddiqi et al., 2010). These two interventions aimed at creating smoke-free home (SFH) environments through the participation of primary school children aged from 9 to 11, and their parents, community leaders and health professionals. Children participated in classroom activities, such as a quiz, games, role plays, and poster presentations, so that they became familiar with the SHS hazard and the prevention of SHS exposure. They were asked by their teachers to take home materials, both pictorial and written, about the harmful effect of SHS to help their families recognise the benefits and the importance of smoke-free home, and to develop a smoke-free environment in their own homes. The results of the two studies showed that, after the intervention, children's exposure to SHS had been reduced. The percentage of smoke-free households increased after the intervention, and the percentage of households with restricted smoking areas was higher.

2.4.3 Children as change agents in programs in Vietnam

In Vietnam, adults tend to accept their children's requests (Trang et al., 2006), and tend to learn from and share with their children in various areas of daily life (Xuan et al., 2013). The activeness of children was perceived by researchers, not only in school but also in children's daily social interactions with their peers, their siblings and other adults, including their family members (Rydstrom, 2001). Children also showed their activeness in sharing knowledge and health skills in their daily lives (Pridmore, 2003). Although children have contributed greatly to many public health interventions in Vietnam, the idea of 'recruiting children as change agents' in Vietnam is not popular.

A large intervention on dengue fever in three provinces in central coastal Vietnam used several different approaches, of which school-based activities were one component, but not the main focus. The school-based activities were conducted in three primary schools and one secondary school. Children were also recruited to act as message communicators in the program. They attended classroom teaching sessions given by their teachers and participated in different outdoor activities, including community campaigns (clearing bushes and promoting a clean community), competing with their friends and peers on the understanding of dengue fever prevention and conducting 'dengue plays' for local audiences. However, the intervention did not assess children's role as change agents (Nam et al., 2005).

In a study conducted by Hai et al. (2006), primary school children, although not being change agents, was required to act as knowledge transmitters between their schools and their parents. Children were not involved in school-based activities; they simply received leaflets about the harmful effects of smoking and SHS, and were asked to take them home to their parents. Children also received a paper called 'Smoke Free Home Commitment'. They then presented the paper to their parents for their signatures. On signing the commitment paper, children's parents committed to the program and were to ensure that their offspring had a home environment free from tobacco smoke. Although the results of the study did not reveal the association between the contributions of children and changes in their parents' smoking behaviours, the intervention was positive, with the reduction of smoking in the home, an increase in smoking outdoors, and the reduction of children's exposure to SHS at home.

In a dengue prevention program in Dong Thap province in the Mekong Delta region of Vietnam, children were invited to take part in school-based activities, such as attending an expert's speech, classroom games, and composition of poems and slogans on dengue and dengue prevention. At school, they also participated in a sanitation program to clear bushes and unused water containers such as tyres, and broken cups or bowls. Children were expected to discuss with their parents the dangers of dengue and the methods for dengue prevention, and to eliminate all mosquito larval habitats at home. The intervention was evaluated as a successful program in the province; however, the role of children as change agents was not measured (Huong et al., 2009).

In a study by Xuan et al. (2013), children in minority ethnic groups in the northern region of Vietnam were invited to participate in a hand-washing-with-soap (HWWS) program. In this study, primary school children were considered the effective health behaviour transmitters in HWWS from schools to their families, especially with their siblings. They were very active in the program and could implement the different steps of HWWS with little guidance from their teachers. Children showed their interest in practising HWWS regardless of their age, gender or ethnicity. It was observed that the youngest children at primary school (grade 1) were able to implement HWWS for themselves, but failed to communicate with any of their family members about HWWS, while older children (grade 3 or grade 4) could help their siblings develop healthy HWWS behaviours. The results of the study revealed that, through daily practical interactions with peers, family members and teachers, children could achieve good health hygiene behaviours in others.

2.5 Vietnamese context: tobacco control and the primary education program

2.5.1 Overview of tobacco control activities in Vietnam

Tobacco use and the burden on health and on the economy

It has been reported worldwide that tobacco use is a great burden on the economy and health in Vietnam, and elsewhere in the world. In 2011, the WHO estimated that tobacco use was responsible for 90% of all lung cancers, 30% of all other cancers, 75% of chronic obstructive pulmonary disease (COPD) and 25% of ischemic heart diseases in Vietnam (WHO, 2011a). According to a WHO report, there has been a rapid upturn in non-communicable diseases (NCD) in Vietnam with 62% of all hospital deaths and admissions being attributed to NCD (WHO, 2011a).

Vietnam is a country with a high population growth. In 2011, the General Statistics Office of Vietnam (GSO) estimated the population of Vietnam had reached 87,840,000, ranking Vietnam 3rd in South-East Asia and 13th in the world in terms of population size (GSO, 2011). The number of adult smokers in the country was estimated at about 17 million people, of whom 13 million smoked cigarettes and 4 million who smoked a water pipe (MOH, 2010). Tobacco consumption per capita in Vietnam has been estimated to have doubled between the years 2000 and 2010 (WHO, 2011a). In 2010, the prevalence of adult male smokers in Vietnam was 47%, while that of adult female smokers was only 1.4%. The mean age at smoking initiation was 19.9, and the youngest age of starting the first cigarette in life was younger than 15 years of age. The proportion of adults exposed to SHS at home was 73.1% and at work was 55.9%, of which the exposure to SHS among females at home was 69.2% and at work was 41.4% (MOH, 2010). While data for smoking and exposure to SHS is available for adults, there is no nationwide data available for the exposure to SHS of children of different ages. Data from different studies in various places in the country showed that the prevalence of children exposed to SHS ranged from 60% to above 70%, depending on the regions and on the ages of the study populations (Hai et al., 2006, Huong et al., 2011, Minh et al., 2007, Nga and Ha, 2007, Suzuki et al., 2009).

It was estimated that tobacco use causes more than 40,000 deaths per year in Vietnam. This number is much greater than the deaths caused by traffic accidents, and greater than the number of cumulative deaths caused by HIV/AIDS up to the year 2008 in Vietnam; in addition, tobacco consumption has contributed to 10% of total disability adjusted life years (DALY) among men (WHO, 2011c, Levy et al., 2006).

A 2005 study on the cost of three tobacco-related diseases (lung cancer, non-cancer diseases and COPD) in Vietnam showed that the cost of inpatient care of smoking-related diseases was

US$77.5 million, which accounted for 0.22% of the country's gross domestic product (GDP) and equalled 4.3% of the total healthcare expenditure of the country (Ross et al., 2007). It was estimated that in the year 2007, 2,304 billion Vietnamese dong (VND) or approximately US$128 million were spent on the treatment of just these three groups of diseases (Phu et al., 2006). In addition to the direct costs of treatment, there were a large number of indirect societal costs related to loss of income for the victims of avoidable diseases and their families, which can lead into a cycle of poverty (WHO, 2011a). In reality, more than 25 diseases are caused by tobacco consumption, which means that the cost of diagnosis and treatment of all tobacco-related diseases is much greater than the results found in this study (Phu et al., 2006)

It has been estimated that, if tobacco use were stopped in Vietnam, the health sector would be able to save 804 billion VND a year for the inpatient treatment of COPD, lung cancer and ischemic heart disease patients (Phu et al., 2006). In addition to the economic burden on the health sector, the spending on tobacco at a household level outweighed the spending on education and health. One study estimated that, if the money spent on tobacco was used to purchase food, 11.2% of poor households would rise above the poverty level (Minh et al., 2006). This study also concluded that tobacco expenditure had widened the gap between rich and poor and contributed to inequity in Vietnam.

In conclusion, tobacco use in Vietnam not only adversely affects the health of individual smokers and their families, and their family's general welfare, but it also negatively impacts the economy of the country, and persistently imposes poverty on tobacco users and their household members (WHO, 2011a).

Tobacco control system in Vietnam

To control the 'epidemic' of tobacco consumption in Vietnam, a special government office working on health and tobacco control was established in the year 2001. Under the Decision No 467/QD-TTg on the establishment of the Vietnam Steering Committee on Smoking and Health (VINACOSH), there was a requirement for VINACOSH to work in collaboration with several ministries, including the MOH, Ministry of Culture and Information, Ministry of Industry and Trade, Ministry of Planning and Investment, Ministry of Education and Training (MOET), Ministry of Finance, and some other social civil organisations, such as the Youth Union, Women's Union, and Farmers' Association etc. (The Government of Vietnam, 2001). Under the coordination of VINACOSH, all organisations working in tobacco control, both state-owned and non-government, share information on tobacco control activities on a monthly basis and seek technical support from

each other when necessary in order to work most effectively in the control and reduction of tobacco use. The MOH, specifically VINACOSH, was designated to be the leading agency for these activities. Other related ministries and community organisations in Vietnam were also required to participate in these activities (The Government of Vietnam, 2007).

In short, the management system of VINACOSH is presented in Figure 2.3.

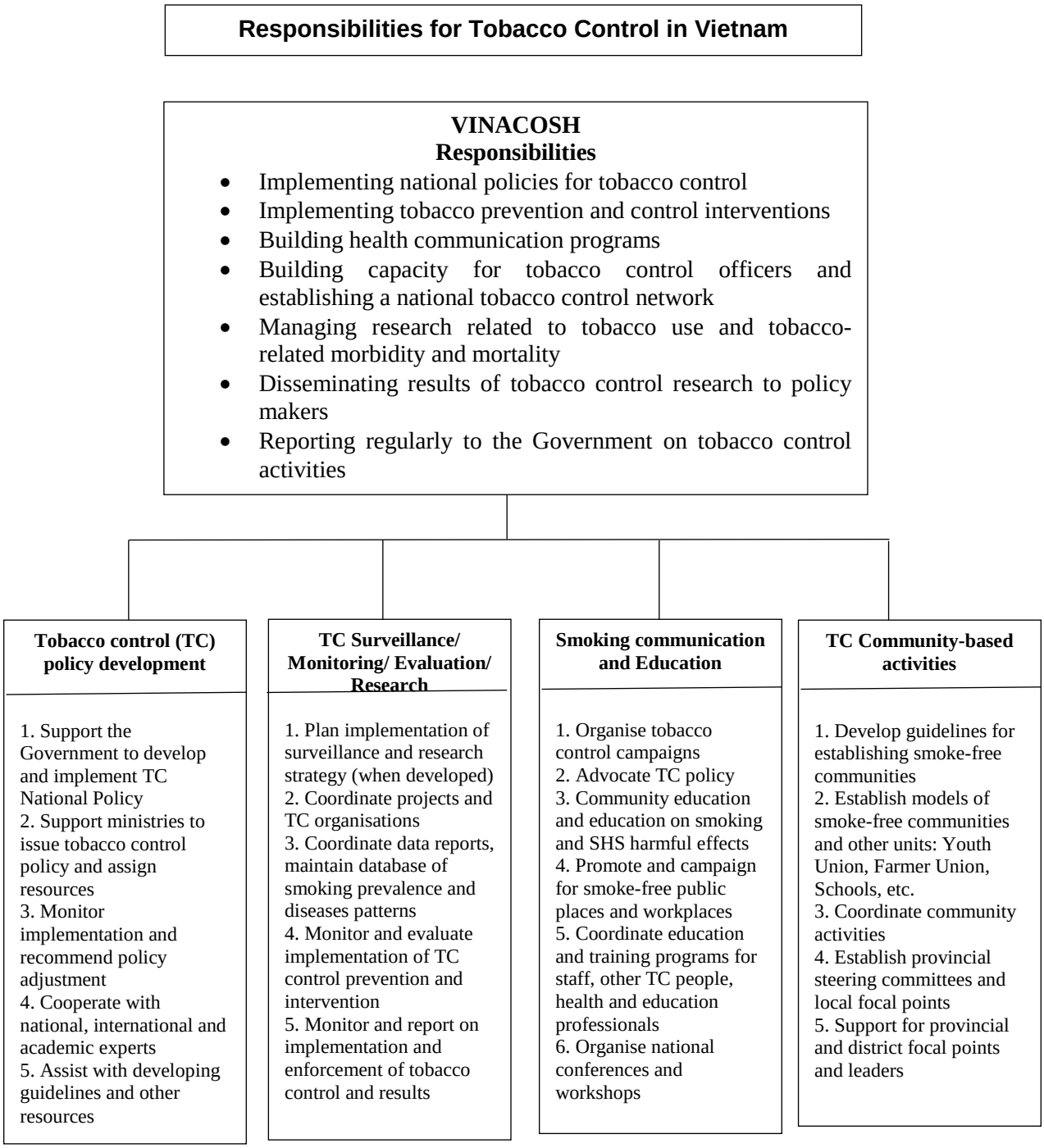


Figure 2.3 Responsibilities for tobacco control in Vietnam. Source: WHO (2011c)

2.5.2 Tobacco control in Vietnam: legislation, enforcement and compliance

Tobacco control policies and legislative documents

The Vietnamese Government has recognised the negative impacts on health and on the economy associated with tobacco consumption and has implemented a range of control measures to reduce smoking. Measures include policies and legislative documents issued to control tobacco consumption and the enforcement of these policies. The milestones for tobacco control activities and policies in Vietnam up to the year 2010 are shown in Figure 2.4.

Figure 2.4 Milestones for tobacco control activities in Vietnam. Source: WHO (2011a)

The overall objective of the National Tobacco Control Plan (NTCP) is to reduce the male smoking rate from around 50% to an ambitious 20% and to maintain a female smoking rate below 2%. The prohibition of smoking in public places, such as theatres, offices, health facilities, schools, airports, and railway stations, is also part of the NTCP. Selling tobacco products to people younger than 15 years of age is prohibited. The NTCP also recommends that individuals do not smoke at social events such as weddings or funerals. A comprehensive ban on tobacco advertising is included in this policy (The Government of Vietnam, 2000). Several circular letters were also issued by ministries in respect to the comprehensive ban on tobacco advertising, such as Circular Letter No. 19/2005/TT-BVHTT, and Circular Letter No. 78/2008/TT-BVHTTDL (MOCI, 2005, MOCST, 2008).

The Vietnamese Government's determination to control the current tobacco consumption 'epidemic' is reflected in the Prime Minister's Decision No. 77/2002/QD-TTg on Ratification of the Programme of Prevention and Control of Certain Non-communicable Diseases for the Period 2002–2010 (The Government of Vietnam, 2002). In 2003, the Government of Vietnam signed the WHO FCTC and ratified it on 17 December 2004. As a strategy to reduce smoking, tobacco products such

as cigarettes have been burdened with a high tax, from 55% in the year 2006–2007 up to 65% of the wholesale price in 2008 (The National Assembly of Vietnam, 2005b, The National Assembly of Vietnam, 2008a).

A successful outcome for the tobacco working groups and tobacco control activities in Vietnam was the issue by the Prime Minister of Decision No. 1315/QD-TTg, approving the action plan for the implementation of the WHO FCTC in 2009. This decision covers all aspects of tobacco control, including a comprehensive ban on tobacco advertising, promotion and sponsorship; and prohibition of smoking in public places and workplaces and financial penalties for offenders (The Government of Vietnam, 2009).

Recently, a great era for tobacco control in Vietnam began. The Law on Tobacco Control was passed by the National Assembly in June 2012 and officially came into effect on 1 May 2013. This Law comprehensively covers all the legislative content addressed by the previous policies and legislation, and is of the highest precedence in terms of legislative status. The Law has 35 articles that extensively cover all aspects of tobacco control, including smoking cessation, taxation, banning of tobacco advertising, promotion and sponsorship, 'kiddie packs', pictorial health warnings, manufacturing and trading tobacco, controlling and eliminating tobacco smuggling, and banning smoking in public places. The banning of smoking in defined places is more detailed and more comprehensive compared to previous policies and legislation. In addition, this legislation requires establishment of a fund for tobacco control activities from the tax on tobacco (The National Assembly of Vietnam, 2012). A series of decrees and circular letters were issued by the government through the relevant ministries (MOH, MOIT, MOCST) to provide guidance for organisations and the public on the implementation, compliance with, and enforcement of the legislation. The Circular Letter on the Pictorial Health Warnings is an example of this type of document (MOH and MOIT, 2013).

However, the 2012 Law on Tobacco Control in Vietnam does not cover all the previous gaps between Vietnamese Law and the WHO FCTC. For example, the 2012 Law still allows philanthropic sponsorship from the tobacco industry, while the WHO FCTC requires a comprehensive ban on such sponsorship. Similarly, the FCTC does not allow the display of tobacco at points of sale, while the 2012 Law permits the display of one pack or one carton of each brand of tobacco at points of sale. In relation to the ban on smoking in public places, the 2012 Law does not recognise the rights of workers/staff in pubs, bars, discotheques, etc. to breathe air free from tobacco smoke when it allows these places to have designated smoking areas, and this provides an

exception to Article 11 that states that “smoking is prohibited in indoor workplaces”. This also belies Article 8 of the WHO-FCTC.

Enforcement and compliance of the policies and legislation on tobacco control in Vietnam

As the 2012 Law on Tobacco Control in Vietnam only came into effect on 1 May 2013, there has been no study or research on its enforcement. The following section will present the results of several studies on the enforcement of and compliance with policies and legislation on tobacco control in Vietnam prior to May 2013. Such enforcement and compliance have not been very successful.

The report on the Global Adult Tobacco Survey (GATS) – Vietnam published by MOH of Vietnam (2010) showed that the rates of smoking among men and women were 47.4% and 1.4% respectively. Although the percentages of smokers have decreased compared to those in the National Health Survey of 2001–2002 (MOH, 2003), they were still relatively high and could not meet the ambitious objective that the NTCP set in their plan in the year 2000 (which was to decrease the smoking prevalence among adult men to 20% by the year 2010) (The Government of Vietnam, 2000). According to the GATS report of 2010, the percentage of adults exposed to SHS at indoor workplaces was 55.9%, while the percentage of adults exposed to SHS at home was 73.1% (MOH, 2010). A study conducted by the Vietnam Public Health Association (VPHA) on the compliance with Decision 1315/QD-TTg revealed that the average rate of smoking among men at work was 33.3%; the rate was relatively high at some sites, such as Hue and Da Nang (approximately 44.0%). With regard to exposure to SHS, nonsmoking employees had to inhale air polluted by tobacco smoke for nearly 2.4 days per week, and nearly a quarter of them were exposed to SHS at work for 5 days per week. The survey also indicated poor compliance with the ban on smoking in public places and work buildings (VPHA, 2010). A report from the Hanoi School of Public Health (HSPH) showed that the proportion of tobacco retail stores in 10 provinces in Vietnam violating the ban on tobacco advertising and promotion was very high, at nearly 95% (Anh et al., 2010).

2.5.3 Primary education in Vietnam, and teaching healthy practices

Introduction to primary education in Vietnam

The Vietnam Education Law as updated, revised and issued in 2005 by the Vietnam National Assembly (2005a) states in its Article 10 that ‘the opportunity of education is equal for every Vietnamese citizen, regardless of ethnic group, religion, belief, gender and socio-economic status’.

Primary education is mandatory and free in Vietnam, as provided for in Article 59 of the Constitution of Vietnam issued in 1992 (The National Assembly of Vietnam, 1992). In 2005, compulsory education was extended by legislation to include secondary education (Article 11 of The Education Law 2005) (The National Assembly of Vietnam, 2005a).

Primary education in Vietnam is over a five-year period with five grades (from Grade 1 to Grade 5). Children start primary school at the age of six (The National Assembly of Vietnam, 2005a). According to the 2009 National Survey on Demography and Accommodation (GSO, 2010), the percentage of children who entered primary schools according to their age in 2009 was relatively high (95.5%). The percentages in urban and rural areas were 97.2% and 94.9% respectively.

The objective of primary education in Vietnam, under the 2005 legislation (Article 27), is to ensure that primary school children can acquire simple and necessary knowledge about nature, society and humans; acquire basic skills in listening, speaking, reading, writing, calculation, and hygiene; and develop a basic appreciation of singing, dancing, music and fine arts (The National Assembly of Vietnam, 2005a). Primary education in Vietnam is identically implemented in both public and private primary schools and is taught in two sessions per day, morning and afternoon (MOET, 2000).

Subjects taught in the primary education program are presented in Table 2.1. The core subjects are Mathematics and Vietnamese. In addition, primary school children have to study the subject Nature and Society from Grade 1 to Grade 3. In Grades 4 and 5, this subject is replaced by Sciences. Two additional subjects, namely History and Geography, are also introduced to primary school children in Grades 4 and 5. English is studied by primary pupils in Grades 3, 4 and 5; however, it can be delivered to pupils in Grades 1 and 2 if the schools have sufficient resources to teach it, and the schools and pupils' parents/guardians have reached a consensus on whether to teach this subject. Other supplementary primary school subjects, including Music, Arts, Ethics, Physical Education and Informatics, are also delivered to primary school children in the standardised curricula (MOET, 2005, MOET, 2000).

The core subjects are the main focus of teachers in primary schools, especially Mathematics and Vietnamese, because these two subjects are used for the assessment and classification of pupils at the end of each academic year in Grades 1, 2 and 3. From Grade 4, three additional subjects (Sciences, History and Geography) are used each year for the assessment and classification (MOET, 2005). In reality, core subjects are the main focus of the teaching program, with other subjects given

lower priority. The lower priority subjects include some teaching good or healthy practices for children, such as hygiene and hand washing with soap (HWWS) (Xuan et al., 2013).

Table 2.1 Subjects taught in primary education in Vietnam

Subject	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Mathematics	X	x	x	x	x
Vietnamese	X	x	x	x	x
Nature and Society	X	x	x	N/A	N/A
Sciences	N/A	N/A	N/A	x	x
History	N/A	N/A	N/A	x	x
Geography	N/A	N/A	N/A	x	x
English	P	P	xx	xx	xx
Music	Xx	xx	xx	xx	xx
Arts	Xx	xx	xx	xx	xx
Ethics	Xx	xx	xx	xx	xx
Physical education	Xx	xx	xx	xx	xx
Informatics	Optional	Optional	Optional	Optional	Optional

Note:

x*: core subjects*

xx*: supplementary subjects*

N/A: Not available in the program

P: not required but each school can apply to teach their pupils based on agreement from parents/guardians

Source: Adapted from the Decision of the Minister of Education and Training on the promulgation of the criteria for assessment and classification of primary school pupils (MOET, 2005).

Teaching of healthy practices in primary education in Vietnam

Many topics on 'Healthy Practices' are taught in the primary education program in both state and private primary schools. This section will describe briefly the contents of 'Healthy Practices' in each grade, from Grade 1 to Grade 5, as detailed in the textbooks used in primary education in Vietnam.

Primary school children in Grade 1 in all primary schools in Vietnam are taught how to read and how to write in the subject 'Tieng Viet' (Vietnamese), and how to calculate in the subject 'Mathematics'. They are familiarised with the use of multiple choice and true/false questions in these two subjects, especially in 'Vietnamese'. These two subjects are taught throughout the primary education program. At the beginning of Grade 1, children are introduced to some 'healthy practices' in the subjects 'Ethics' and 'Nature and Society', being taught some basic and simple skills in looking after their bodies and the environment, having good personal hygiene (Thuy, 2013, My and Nga, 2013) and behaving appropriately towards other people. Information introduced in

Grade 1 is very basic. The subject ‘Ethics’ is taught throughout the primary education program, while the subject ‘Nature and Society’ is only taught from Grade 1 to Grade 3. It is replaced by the subject ‘Sciences’ in Grades 4 and 5. In addition, children become familiar with several other basic skills, such as drawing, shaping, cutting, singing, English reading and listening in the primary education program (The National Assembly of Vietnam, 2005a).

Teaching ‘healthy practices or hygiene health practices’ in ‘Nature and Society’ and ‘Sciences’

Teaching basic health information begins in Grade 2 and mainly uses colourful pictures on topics such as the digestive tract, how to prevent diarrhoea and parasitic worm infection, and the reasons why people need to eat safe and hygienic food. Children are also trained how to keep the home and the school environment clean, how to prevent poisoning at home, how to prevent falling at school, and how to avoid traffic accidents and injury. The training includes practical sessions where children are involved in role-plays in their classroom settings. The children are also introduced to some aquatic and terrestrial plants and animals and the physical environment e.g. the sun, moon, etc. (Nga et al., 2010a).

In Grade 3, children learn about the respiratory tract and how to avoid respiratory tract infection, including the prevention of lung-related diseases and pneumonia. Smoking and tobacco smoke are also mentioned as a cause of respiratory tract infection, using two simple pictures, the first with a smoking man (Figure 2.5), and the second with two children playing in a living room and two men smoking beside them (Figure 2.6). Children have to identify whether the two actions of ‘smoking’ in those pictures are ‘good’ or ‘bad’ in protecting respiratory health. The circulatory system and blood are covered in the next section of the Grade 3 text book in ‘Nature and Society 3’, with basic information on the heart and blood vessels and how to prevent cardiovascular diseases. Smoking is mentioned in this section as a cause of cardiovascular diseases. Specific activities on maintaining a hygienic environment are covered in another section of Nature and Society 3. Children also learn about several types of flowers, fruits, vegetables, fishes, wild and domestic animals, insects, shrimps and crabs, birds and chickens. All the lessons are illustrated with many colourful pictures. Apart from practice in a classroom setting, children might have the chance to go to zoos and/or botanical gardens with teachers, and with the consent of their parents/guardians.

Figure 2.5 Figure 2.6

Figure 2.5 Picture 'A man smoking' in Subject 'Nature and Society 3'. Children have to determine if this action is good or bad for the respiratory health system of the man himself (Nga et al., 2010b)

Figure 2.6 Picture 'Two men smoking' in the home while two children are playing around them in Subject 'Nature and Society 3'. Children have to identify if the smoking action is good or bad for the respiratory health system of the two children. In Subject Nature and Society 3 (Nga et al., 2010b)

People's feelings or emotions, such as sadness, happiness or anger are introduced to students in Grade 3 as images of a sad face, a happy face or an angry face (see Figure 2.7).

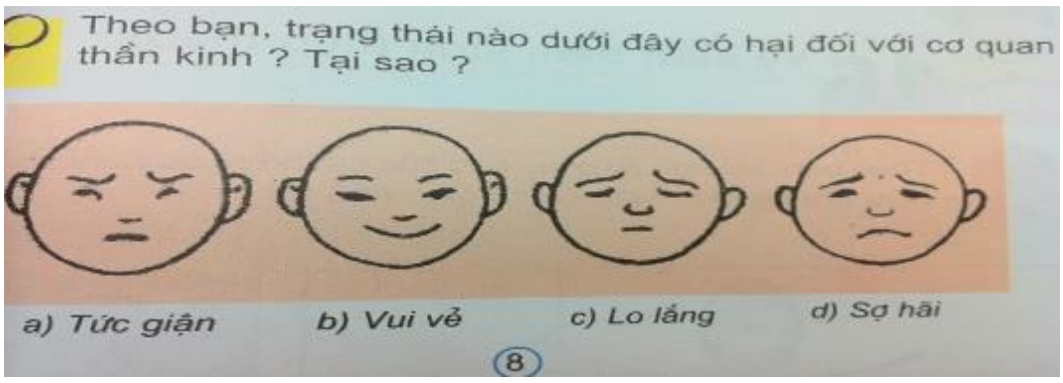


Figure 2.7 Different emotions are illustrated in the subject Nature and Society 3. Picture a: the angry face; picture b: the happy face; picture c: the anxious face; picture d: the frightened face (Nga et al., 2010b).

The subject 'Sciences' replaces the subject Nature and Society in Grades 4 and 5. The importance of water, air and food to humans is introduced to children in Grade 4. Furthermore, relatively complicated information, illustrated with pictures, and including metabolism, nutrition, and the roles of fruit, vegetables, rice, milk, meat and fat in nutrition and metabolism, are also taught in the program. Children are advised to choose and to eat clean and safe food, and are taught

about the prevention of malnutrition, obesity, diarrhoea, cholera and dysentery. Prevention of drowning is another issue that is introduced in the subject Sciences 4. Children are also taught how to save water and to protect water from being contaminated, and how to avoid exposure to air pollutants, including tobacco smoke. (Nga and Thai, 2009b).

The differences in different body development stages, from foetus to adult, are an important part of the content in the subject 'Science 5'. In this subject, children are taught how to look after their personal hygiene, and how to avoid or to say no to substances such as alcohol, tobacco and drugs. The adverse health effects of alcohol abuse, smoking and tobacco smoke, and drug abuse are summarised for children in their textbook (Figure 2.8 and Figure 2.9). The prevention of several infectious diseases is also covered in this book, such as the prevention of malaria, dengue and haemorrhagic dengue fever, Japanese encephalitis, tuberculosis, HIV/AIDS, and hepatitis A. Preventing discrimination against HIV/AIDS patients, preventing road traffic injury, and preventing sexual abuse are also taught in Grade 5 (Nga and Thai, 2009a).

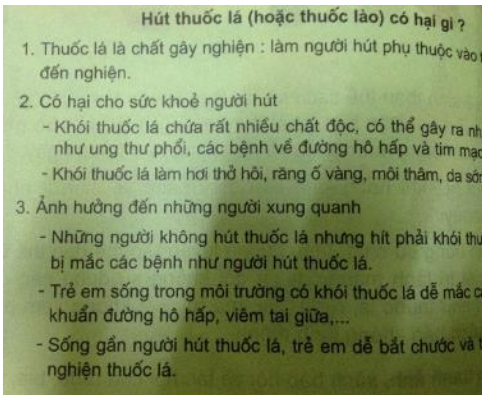


Figure 2.8 Figure 2.9

Figure 2.8. Harmful effects of smoking and harmful effects of SHS in the Lesson 'Say No to Stimulants' 1: concepts of addiction to tobacco; 2: harmful effects of smoking on smokers; 3: harmful effects of SHS on surrounding people. In Subject Sciences 5 (Nga and Thai, 2009a).

Figure 2.9: Image from the Lesson 'Say No to Stimulants'. In Subject Sciences 5 (Nga and Thai, 2009a)

Teaching 'Healthy and social practices' in the subject 'Ethics'

From Grade 1, children in primary schools in Vietnam start studying the subject 'Ethics'. Ethics in Grade 1 presents simple pictures and only some sentences to introduce children to how to behave properly in different contexts (Thuy, 2013).

Punctuality, admitting and amending behaviours, taking care of friends and helping disabled people are the main topics covered in Ethics in Grade 2. In addition, children are taught how to be a tidy person, and how to keep their schools and classes tidy and clean. They are also taught how to interact with other people in terms of making requests and offers. Children are encouraged to be diligent in their study and to help parents in their homes. Skills such as answering the phone appropriately and politely are mentioned in the content of the subject. Additionally, children are taught to behave politely when they visit neighbours or relatives. (Thuy et al., 2010d).

All the 'good practices' that children learn in Grade 2 will be repeated in Grade 3 at a higher level. Many other aspects of good social behaviour are discussed and encouraged in Grade 3. Children are often required to show their attitude to social behaviours through the application of the Likert scale (agree, not sure, disagree) (Thuy et al., 2010c).

In Grade 4, children learn how to express their ideas to their peers, to their teachers, their parents and relatives at home and other adults. Behaving politely with other people is an important aspect of the subject 'Ethics 4'. Children are required to be honest, both in their study and in their daily living (Thuy et al., 2010a).

In the subject Ethics 5, children are taught to be responsible for their own actions. They are taught to respect their peers, friends, adults and women. Some of the 'good practices' that they learn in the previous grades, such as protection of natural resources, and helping neighbours, are reinforced in Grade 5 (Thuy et al., 2010b).

2.6 Research hypotheses

The literature, as reviewed in this chapter, shows that children's exposure to SHS in Vietnam is a major public health problem, as it is in many other countries. Prior to the pilot study conducted by Huong et al. (2011) (Chapter 3, Section 3.2), there had been no research on Vietnamese children's understanding of the harmful effects of SHS on their health and what they can do to prevent exposure to SHS. In addition, although children are believed to be effective change agents in various public health interventions, there had been no intervention using children as change agents to prevent their own exposure to SHS and to persuade adults not to smoke in the home.

Given the health impacts of SHS on the health of children in Vietnam, an intervention study involving primary school children as change agents has been proposed to reduce their exposure to

SHS at home and to persuade adults not to smoke in the home. The study blended their participation with appropriate parts of the Vietnamese primary education curriculum.

The study, as presented in this thesis, tested the following hypotheses:

1. After the intervention, the exposure of children to SHS will decrease significantly.
2. After the intervention, parents of children will significantly change their smoking pattern from inside the home to outdoors.
3. After the intervention, children's KAP on SHS will have improved significantly.
4. After the intervention, the children's capacity to persuade adults not to smoke inside the home will be confirmed.

Chapter 3 Research Methods and the Pilot Study

3.1 Introduction

The design of the study described in this thesis was a school-based intervention with pre- and post-intervention data collection. The quasi-experimental design included control and experimental groups in which the knowledge, attitudes and practices (KAP) of primary school children in relation to secondhand smoke (SHS) were assessed pre- and post-intervention. In addition, the children's capacity to persuade their parents not to smoke in the home and their exposure to SHS in their home environment, were assessed pre- and post-intervention.

A mix-method approach was applied, using a self-administered questionnaire, focus group discussions and in-depth interviews. The questionnaire was designed and piloted in an initial pilot study in 2010 (Huong et al., 2011) (Section 3.2). Some focus group discussions were also undertaken during the pilot study and their outcomes were used in the design of the full study.

The theoretical framework of this study was based on elements of the model 'Smoke-Free Homes' used in an intervention study in the United Kingdom (Alwan et al., 2011) (see Box 3.1).

Box 3.1 The theoretical framework of the Smoke-Free Homes model

Providing information: Reinforcing understanding of the harmful effects of secondhand smoke in an easy-to-understand format.

Empowerment: Empowering young people with the tool of negotiation and encouraging them to become 'champions of smoke-free spaces'.

Negotiated goals: Giving families a menu of options on how to reduce their children's exposure to tobacco smoke; letting them decide for themselves which of the options are achievable for the family.

Signing a contract: Encouraging parents to sign a 'Promise' form and to return it to the project team, which increases their commitment and the likelihood of their maintaining smoking restrictions in the home.

Positive feedback: Praising parents for the positive consequences of reducing their children's exposure to SHS, which increases self-esteem and efficacy in making changes in their lives.

Immediate benefits: According to the basic principle of social marketing 'exchange', people expect to receive a benefit in exchange for giving up something. In this case, in addition to praise and encouragement, families were 'rewarded' with a modest 'goody-pack'.

Source: Alwan et al. (2011)

Based on the above theoretical framework of Alwan et al. (2011) and the theoretical framework in a study of children as health-promoting actors in the family (Christensen, 2004), a study on hand-washing in China (Bowen et al., 2007), a study on diarrhoea prevention in Indonesia (Rohde and Sadjimin, 1980), a quasi-experimental study on children as health change agents in Kenya (Onyango-Ouma et al., 2005), a program on hand-washing with soap in Vietnam (Xuan et al., 2013), and a study on dengue prevention in Puerto Rico (Winch et al., 2002), the current study's theoretical framework was redeveloped to fit the Vietnamese cultural context (see Figure 3.1).

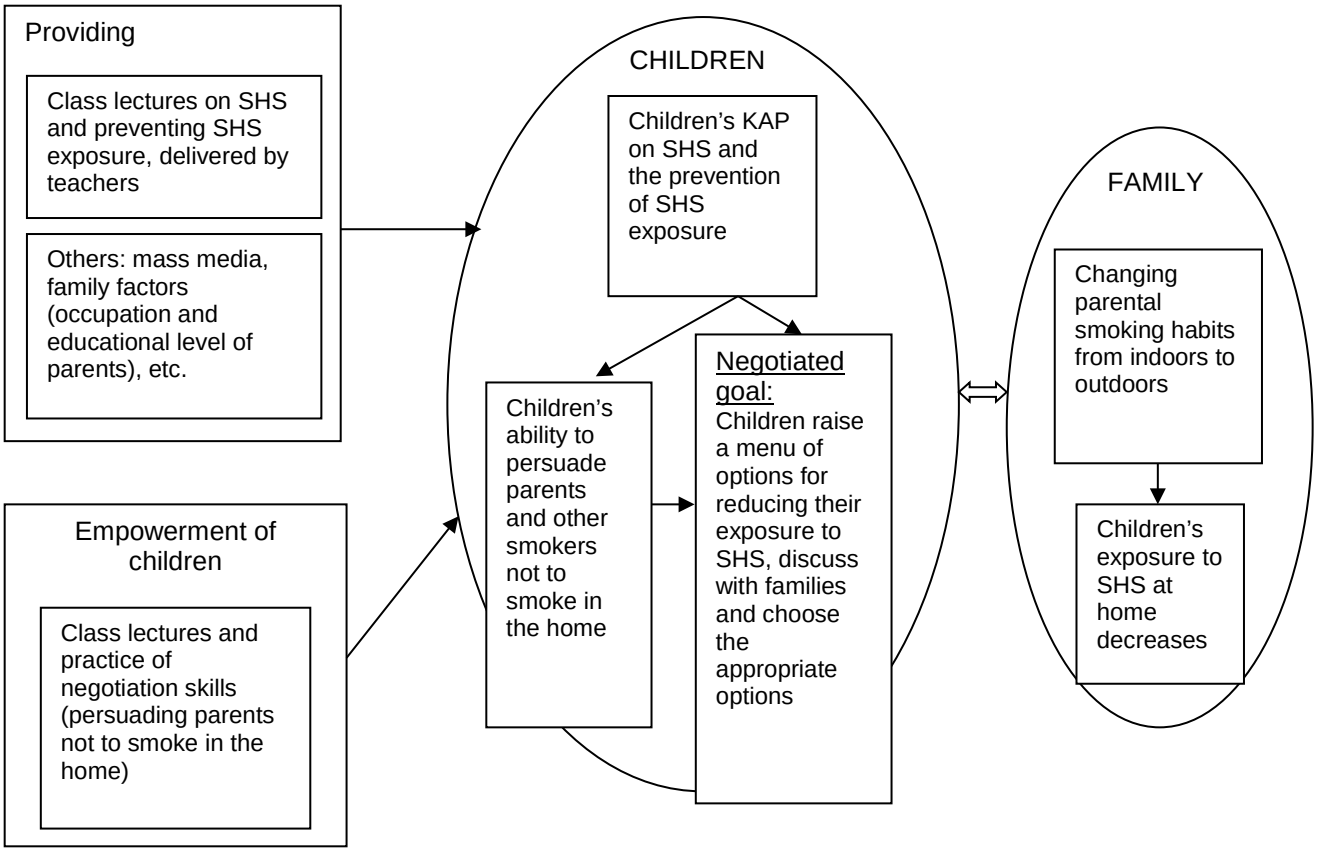


Figure 3.1 Theoretical framework of the study Developing Trial Intervention Model 'Children Say No to Secondhand Smoke'

3.2 The pilot study and its implications

3.2.1 Rationale

The pilot study was conducted in November 2010 as a preliminary to the main study. Its purpose was to explore community acceptance of the proposed study and to seek the community's suggestions about the idea of involving local children as change agents in an intervention program

on tobacco control. It also aimed to test the feasibility of the study's self-administered questionnaire being filled in by primary school children aged 8 to 11, and to obtain parents', teachers' and children's comments about the questionnaire. The pilot study also allowed the principal investigator to assess any risk associated with the use of children as change agents in the Vietnamese context, and informed the development of the ethics application for the main study.

3.2.2 Location and timeline

The pilot study was conducted in November 2010 in Chuc Son B Primary School in the Chuong My district. The school is one of two primary schools in Chuc Son town, and is located in a semi-rural area of the district.

3.2.3 Target group

The study approached three main target groups in the pilot study:

1. teachers teaching Grade 3 to Grade 5
2. parents/legal guardians of primary school children aged 8 to 11
3. primary school children aged 8 to 11 who were in Grade 3 to Grade 5.

3.2.4 Methodology applied in the pilot study

Focus group discussions were the only qualitative method applied in this study. Eight focus group discussions were conducted: one with parents/legal guardians of primary school children (8 parents, of whom there were four fathers and four mothers, three fathers were smokers and the other left were nonsmokers); one with teachers teaching Grade 3, 4 and 5 (six female teachers); and six with primary school children in grades 3, 4 and 5 (12 per group). In addition, children were also required to complete the self-administered questionnaire after participating in the focus group discussion.

3.2.5 Initial findings

The occurrence of smoking and children's exposure to SHS

From the discussions with teachers, parents and children, smoking appeared to be common and popular in the community, and there was no difference in smoking habits between households with and without children. Smokers often smoked everywhere in the community, both outdoors and indoors, including inside the home, and even when they were travelling by motorbikes or bicycle. As estimated by children, around half to two-thirds of households in their communities had at least one regular smoker.

…. Yes, around 2/3 of households in my community [have at least one regular smoker]. They often smoke when they are walking, riding bikes or motorbikes or inside their houses… (FGD, children in Grade 4)

… There are around half of the households in my community having smokers. They smoke in their living rooms, in their bedrooms, or in front of their houses… (FGD, children in Grade 3)

... My father smokes water-pipes. He smokes every day. I usually see him smoking inside my house. (FGD, children in Grade 5)

This [smoking] is also popular; there is no difference between families having children or not having children. Generally speaking, in both families with children or without children, smokers still smoke inside their home. (FGD, teachers)

According to parents and teachers, a high percentage of children were being exposed to SHS in their community, and the situation was even worse than it had been in the past. The reason for the increase was the economic development in the district that provided greater purchasing power for tobacco products. Also, some people had higher incomes and could build multi-floor houses that were often more airtight and not as well-ventilated as older houses. These issues in relation to smoking emerged as a theme in the parents' focus group discussion.

…You can see many [people] building houses here with closed windows which keep tobacco smoke inside [the houses]. In the past, our ancients [elders] smoked a lot, but they lived in open houses, so the smoke could go out, but not now… (FGD, parents)

The situation of men smoking while they were holding their babies also occurred. Mothers seemed to realise the danger of SHS to their children's health, but they failed to persuade their husbands not to expose their children to SHS.

... My husband helps me to take care of our 2-year-old daughter when I am preparing meals. But I hate the way he smokes while he is holding our baby in his arms. I told him many times, but he still smokes that way. (FGD, parents).

The analysis of the self-administered questionnaire filled by children showed that there were 60% of children reported to currently live with smoker(s), of which 48.7% lived with one smoker and 11.3% lived with two or more smokers. 38.3% of all children reported to be exposed to SHS at home a week prior to the data collection of the pilot study.

Understanding of the harmful effects of SHS on children's health

Awareness of the adverse effects of SHS on children's health differed in each target group. Teachers had the best knowledge and understanding. They mentioned many typical diseases and

symptoms caused by children's exposure to SHS, such as middle ear disease, lower respiratory infections (pneumonia and bronchitis), asthma, and respiratory symptoms (cough, sputum). However, parental knowledge on this issue was poor. All parents attending the focus group discussion agreed that SHS could be dangerous to their children's health, but none of them could mention any diseases or symptoms that SHS might cause in their children, except coughing.

> *'As I understand, when adults smoke and children inhale tobacco smoke, it is very harmful to children's health. I think it is as harmful as if they are directly smoking; sometimes it is even more harmful if children inhale a large amount of tobacco smoke, because their immunity is worse than that of adults.'* (FGD, parents)

> *We don't know what diseases are caused by tobacco smoke to children's health, but the mass media said that it is very harmful if we let our children inhale tobacco smoke. I think it can cause coughing in children – am I right?* (FGD, parents)

Children, on the other hand, had a better knowledge of the association between SHS exposure and their health than did their parents. Most children in the classroom discussions could mention some basic and simple symptoms caused by SHS, such as coughing, sputum, wheezing or running nose. Some other symptoms, like phlegm and breathlessness, could only be named by Grade 5 children. Interestingly, many children had obvious misunderstandings in considering discoloured teeth and bad breath as negative impacts of SHS on children.

Children also expressed their unhappy feelings about their exposure to SHS. All children felt uncomfortable when having to inhale tobacco smoke and would stay away from tobacco smoke.

Acceptance of the proposed intervention and the feasibility of the intervention

When asked about the implementation of an intervention program to create smoke-free home environments for children and to have children acting in a primary role in the program, all parents, teachers and children were supportive of such a program. Teachers and parents showed positive attitudes toward the program, and were willing to be involved as a part of the intervention.

> *I think if they [children] can acquire good knowledge like that and persuade adult smokers, then we as adults we have to support them, listen to them and do what they want [go out to smoke]. If they can realise that tobacco smoke is harmful to their health, we should realise the same. Of course, if some [adults] are smokers, they still smoke, but they should go out [to smoke]… it's natural. If our children know how tobacco smoke affects their health and convince us [not to smoke in home], we will support them* (FGD, parents)

> *That [the intervention program] should be great… I think we can participate in the program by teaching them [children] the harmful effects of tobacco smoke so that they can understand clearly*

about the issue. The teaching could be organised in their self-study time in the afternoon, once a week (FGD, teachers).

Some suggestions were made by both parents and teachers for obtaining better results in the proposed intervention, such as printed leaflets on the harmful effects of SHS on children's health, with colourful pictures for parents, and to be delivered by their children.

The feasibility of the intervention was raised by the principal investigator during the focus group discussions. Both teachers and parents believed that the program could be implemented successfully. As primary school children in the district studied all day, there would be plenty of time in the afternoon session to run the required activities of the intervention. Parental support and children's interest in the program were other factors supporting the feasibility of the program.

Risks for children

Risks associated with children's explanations about SHS and attempts to convince adults not to smoke in the home were considered to be very unlikely, but might happen in reality. The suggestion that mothers be involved in the study as the protecting agents for children at home was proposed by parents participating in the pilot study. In particular, parents suggested the involvement of mothers to minimise any possible risks that might result from attempts to persuade fathers not to smoke indoors. Mothers were willing to help their children and explain to their husbands, or help their children explain to their fathers, why indoor smoking should be reduced.

I think in that case [smoking fathers being angry with children's persuasion], as a mother and a wife, I would tell my husband [about the harmful effects of SHS] so that I can help my daughter. I would explain to him that my daughter was right and I would protect her from his anger... Oh, you've just said that you'll teach her at school about that [the harmful effect of SHS to children's health]? Then she can explain to me and to my husband, and I can explain to my husband too. (FGD, parents)

I would tell my husband that my son is telling him the truth. I would explain to him that my son is taught by his teacher at school about the harmful effects of tobacco smoke and the skills to convince parents, and I would ask my husband to sympathise with him and listen to him. I think it is not impossible, because my son just asks my husband not to smoke indoors and I hope that he can reduce the number of cigarettes he smokes daily. Quitting smoking is very difficult for him. (FGD, parents)

In the FGDs with children, children were interested in and excited about the program and willing to participate. All children optimistically believed that they could successfully, and without any difficulties, persuade their fathers and other smokers in their households not to smoke. When asked how to persuade adult smokers not to smoke in the home, they suggested several approaches, mainly focusing on explaining the hazards of SHS to children's health. However, none of them had

already tried to convince their parents and other smokers in their households not to smoke indoors. No feelings of anxiety in relation to convincing parents and other smokers not to smoke in the home were recorded from participating children.

Children's ability to understand and fill in the questionnaire

At the conclusion of each focus group discussions with teachers and parents/guardians of children, each participant was given a copy of the draft self-administered questionnaire that would be used in the pre- and post-intervention surveys. The purpose of this exercise was to collect comments on the questionnaire for its possible revision. Both teachers and parents agreed that the questionnaire was simple and easy to understand, and children could complete it without any difficulties. Several comments by teachers related to making the questionnaire easier for children, for example by using colourful symbols, a larger font size, and changing some questions in section 'General information'.

> *This questionnaire is simple; I think my students can easily answer all the questions. They are familiar with multiple choice questions since they studied Grade 1. No worry*. (FGD, teachers)

> *In Grade 3, students learn how to protect their respiratory health in the subject Nature and Sciences, and tobacco smoke is considered a risk for their respiratory health. In Grade 5, there is a lesson 'How to say no to stimulants', in which there is a session on smoking and passive smoking. So I think they can all answer your questions*. (FGD, teachers)

> *Oh, I think my son can answer all the questions here. I think he can understand all the questions.* (FGD, parents)

During the classroom discussions, children were asked to complete the draft questionnaire. All 72 selected children were able to complete the questionnaire in approximately 30 minutes. However, almost all children misunderstood 'discoloured teeth' as one of the harmful effects of SHS on their health. Apart from that, a question on the number of siblings made them confused about whether to count themselves in the answer. None of children complained about the font size or any format aspects of the questionnaire.

Implications from the pilot study

The results of the pilot study implied that members of the community greatly appreciated the intervention program, and considered that the program would be effective in protecting children from exposure to SHS at home. A belief in the feasibility of the program was observed during the FGDs conducted with parents, teachers and primary school children from Grade 3 to Grade 5 in the pilot primary school.

Risks of children being scolded by fathers when persuading them not to smoke in the home were seen as possible; however, parents perceived this as 'very unlikely'. Help from mothers in protecting children from the anger of fathers who smoke was suggested by all participating parents. Based on this finding, the main study included the involvement of mothers in the full intervention school, with the participant information sheet (PIS) sent to every mother of the recruited children to ask for their support and help during their children's persuasion attempts at home.

The pilot study revealed that recruited children found no difficulty in filling in the self-administered questionnaire. However, some minor adjustments were made after the pilot study. For instance, question A6 was changed into: 'How many sisters or brothers do you have? (Do not include yourself)' to help children avoid confusion when they answered this question. Apart from that, the revised questionnaire included two more questions on the harmful effects of smoking on smokers before children answered the section on the harmful effects of SHS on their health (questions C1 and C2). This was to help children avoid any misunderstanding regarding the adverse effects of smoking on smokers, and the hazards of SHS for children's health. The font size of the questionnaire was increased according to the suggestions of teachers and parents; however, due to the limited budget, colourful questionnaires were not produced. Black and white questionnaires were used instead.

3.3 Overview of methodology

3.3.1 Quasi-experimental study overview

In epidemiological terminology, intervention studies are often used to test the results of a preventive or a therapeutic measure; such studies are also referred to as experimental studies (Friis, 2010, Friis and Sellers, 2009). There are two types of intervention designs: controlled clinical trials which focus on the individual; and community interventions which focus on the group or community (Friis, 2010, Friis and Sellers, 2009).

According to Friis and Sellers (2009), experimental study designs are the most powerful method of testing hypotheses relating to causation. All other study designs, including descriptive and analytic studies, are considered less powerful. Experimental design can also control potential confounding factors (Crosby et al., 2006, Friis and Sellers, 2009). Validity rankings of study designs are presented in Figure 3.2.

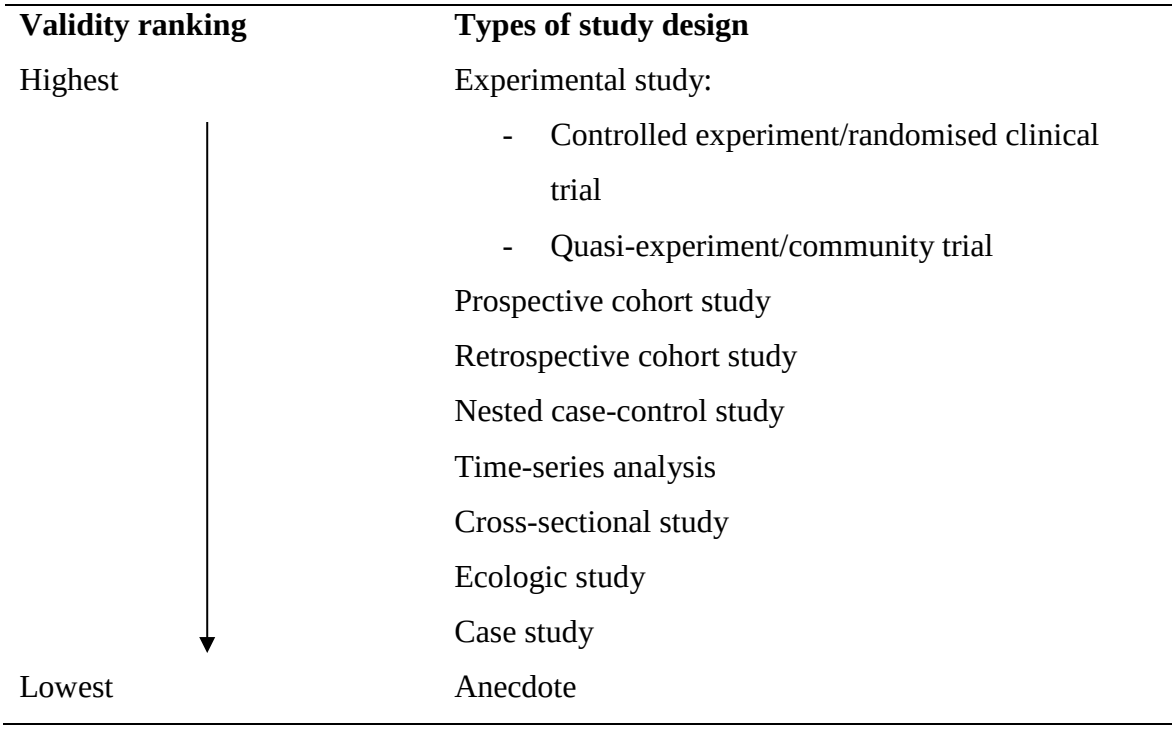


Figure 3.2 Validity for aetiologic inference according to study designs. Source: Friis and Sellers (2009) (page 329) and Künzli and Tager (1997).

Jackson (2009) stated that 'the term *quasi* preceding the term *experimental* indicates that we are dealing with a design that resembles an experiment but is not exactly an experiment' (page 319). That means a quasi-experimental design has some, but not all, of the characteristics of an experimental design (Crosby et al., 2006, Friis, 2010, Friis and Sellers, 2009, Jackson, 2009, Polgar and Thomas, 2008).

Jackson (2009) divided this type of design into six different categories: single-group post-test-only design; single-group pre-test/post-test design; single-group time-series design; non-equivalent control group post-test-only design; non-equivalent control group pre-test/post-test design; and multiple-group time-series design. Friis and Sellers (2009) classified quasi-experimental designs into four different types: post-test; pre-test/post-test; pre-test/post-test/control; and Solomon four-group design.

In these two classification systems, three categories are identical: post-test; pre-test/post-test; and pre-test/post-test/control. Of these three designs, the pre-test/post-test/control design has the highest reliability because it resembles the matched-pairs between-group design in randomised control trial design; however, selection of participants for the study and the control groups is not randomised. For this reason, researchers often select communities with similar socio-demographic-economic-geographic-cultural characteristics for an intervention (WHO, 2001). With the pre-test, it is possible for researchers to see if there is equivalence between the two groups. With the control

group, researchers can compare the differences of some variables or indicators in the intervention group before and after the intervention, as well as evaluating the effectiveness of the intervention strategy by comparing these variables or indicators in the intervention (experimental) group with those in the non-intervention (control) group (Crosby et al., 2006, Friis, 2010, Friis and Sellers, 2009, Jackson, 2009, Polgar and Thomas, 2008).

3.3.2 Focus group discussion method

Focus group discussion (FGD) involves a moderator facilitating several people at a time to discuss a certain topic in order to generate data. The number of people in the group ranges from 6 to 12 (but usually no more than 10), and these participants can be chosen either homogeneously or heterogeneously (Crosby et al., 2006, Liamputtong, 2013, Kitzinger, 1995).

Many authors have reported that the homogeneous group with similar social, cultural, educational and other backgrounds find it easier to talk and to discuss with other members in their group, while in the heterogeneous group, openness and the content of the discussion can be limited (Bloor et al., 2001, Crosby et al., 2006, Liamputtong, 2013). However, as found by Liamputtong (2013), a heterogeneous group sometimes works smoothly, in determining community attitudes and beliefs, and maintaining the flow of the discussion.

A focus group interview, according to Khan and Manderson (1992), is conducted 'with the primary aim of describing and understanding perceptions, interpretations, and beliefs of a select population to gain understanding of a particular issue from the perspective of the group's participants'. In a focus group discussion, researchers often select participants purposively to discuss a topic for approximately 1–2 hours, with the facilitation of a moderator, and in the most appropriate setting where all participants feel comfortable and can participate as actively as possible in the discussion (Bloor et al., 2001, Crosby et al., 2006, Kitzinger, 1995, Liamputtong, 2013). The moderator should encourage the interaction between group participants with minimal intervention, and the content of the discussion should be audio-recorded. (Bloor et al., 2001, Crosby et al., 2006, Kitzinger, 1994, Kitzinger, 1995, Liamputtong, 2013).

Once the data is collected, it is very important that it is transcribed carefully and thoroughly. The analysis of the data should be based on particular themes, and researchers can use extracts of participants' views for further elaboration. The analysis of data from focus group discussion can be conducted manually or by using qualitative analysis software (Bloor et al., 2001).

3.3.3 In-depth interview

In-depth interview (IDI) has been used widely in qualitative research by researchers for a long time; it is one of the most commonly used qualitative methods in many disciplines, including anthropology, psychology, and sociology. IDI involves intensive discussion between two individuals, one as the interviewer and one as the respondent. These two people will discuss a specific topic in depth, for example an issue, program or situation. In some cases, an IDI might include two interviewees at a time, depending on the purpose and the circumstances of the interview (Liamputtong, 2013, Hennink et al., 2011).

Normally, an IDI is used for 'self-disclosure', and often demands deeper knowledge or clarification from respondents. Through an IDI, informants have the chance to express themselves so that the researchers can explore deeper information and conduct more complex data analysis (Liamputtong, 2013, Hennink et al., 2011). Therefore, IDI is often suggested for (but not limited to) capturing information from vulnerable and marginalised individuals, and in exploring informants' perceptions about sensitive topics. For example, IDI is associated with research involving women in some communities, because they may generally lack the chance to express themselves. The nature of the IDI permits women to say what they think, what they feel, what they fear, and what they doubt (Liamputtong, 2013).

To prepare for an IDI, researchers should draw up guidelines and/or lists of questions. Questions should be short, simple and easy to understand, and especially should avoid academic jargon. A number of different types of questions should be used in an in-depth interview: introductory or opening questions; follow-up questions; probing questions; specifying questions; direct questions; indirect questions; structuring questions; and interpreting questions. Through these questions, an IDI can allow interviewees to tell a whole story, or to provide the information that interviewers need (Liamputtong, 2013, Hennink et al., 2011).

An IDI should be conducted in comfortable surroundings. On starting an IDI, interviewers should create a friendly rapport with interviewees. This helps to prevent hesitation by the informants, and builds their trust in the researchers. The researchers should introduce themselves, briefly describe the research, its purpose, the interview process and what to expect during the interview. Participants should also be assured of the confidentiality of the interview, and asked for their consent to be interviewed and for their agreement to the recording of the interview. During an IDI, researchers should take notes on the main content of informants' responses. This allows the researchers to check that all the interview topics are covered, and to ask interviewees for clarification where needed. During the interview, researchers should avoid dichotomies, leading

questions. Keeping silent, active listening, and paying attention to participants' feelings are also effective tools for researchers to obtain as much information as possible from the participants. Encouraging participants to share their thoughts, feelings and worries during the interview is the best way to acquire deeper-level information from them (Liamputtong, 2013, Hennink et al., 2011).

At the conclusion of the interview, the researcher should summarise some of the key points provided by the informants, and ask them if they have anything more to share. Researchers should also express their appreciation of the participants' time and contribution to the study (Liamputtong, 2013, Hennink et al., 2011).

After the interview, the record needs to be transcribed verbatim, both questions and answers, including pauses, laughter, and sounds such as 'hmm', and 'oh'. This will help researchers to understand the feelings of participants during the interview (Liamputtong, 2013).

3.3.4 Design of questionnaire for children

Before designing the self-administered questionnaire completed by children in the study, articles and books on designing questionnaires were reviewed. For a children's questionnaire, it is necessary to keep the wording simple, easy to understand, and familiar, using terminology that children know from their daily life. Short, clear instructions, avoid using vague and ambiguous vocabulary are also required in order to minimise item non-response (Bell, 2007, Borgers et al., 2000, Borgers and Hox, 2001, Lydeard, 1991).

Borgers et al. (2000) suggest that children should be 8 and above if this technique is used. In face-to-face interviews with children, there is a risk of interview bias if the study cannot recruit professional interviewers. Children often tend to answer questions so as to please adults, and this type of questionnaire interview should therefore be controlled carefully (Bell, 2007).

With the 8 to 11 age group, many researchers have used self-administered questionnaires (SAQs) in classroom settings. Children at this age can also participate in computer-assisted self-administered interviews (CASI) or audio-CASI (Borgers et al., 2000, De Leeuw et al., 2004). SAQs completed by primary school children in classroom settings can reduce item non-response, because the process may enhance their attitudes to the test and increase their concentration on the questionnaire (Borgers and Hox, 2001).

According to Bell (2007), the number of responses in a questionnaire should be four to five for children from 11 years of age and above, and three to four options, or preferably only two options ('yes' or 'no'), for children younger than 11. However, Borgers and Hox (2001) suggested

that at least four or five response options should be used for greater reliability and validity of the questionnaire.

In terms of incorporating scale in a children's questionnaire, it is advisable that researchers use visual images, such as happy or sad faces, to establish children's attitudes towards particular issues (Bell, 2007). Clearly and completely labelled scales also result in better responses from children (Bell, 2007, Borgers et al., 2003).

Based on the above suggestions, a self-administered questionnaire (SAQ) on SHS was developed for this study, to be completed by children aged from 8 to 11 years. Factors such as the terminology, the wording of the introduction and the questions, and number of response options were carefully considered.

The content of the SAQ was based on literature from several different sources. Several well-known symptoms and diseases caused by SHS are mentioned in the questionnaire; these are referred to in reports from the World Health Organization (WHO) (1999, 2009), and US Environmental Protection Agency (US EPA) (1992). The content on exposure to SHS and how to prevent such exposure was developed with reference to information from the WHO (2009, 1999), Nga and Ha (2007), Hai et al. (2006), Borland et al (2006), and Hedley and McGhee (2006a, 2006b). The questionnaire was used in the pilot study and later modified as necessary (Huong et al., 2011). See Appendix 1 for a copy of the questionnaire.

3.4 Research methods

3.4.1 Research design

This project was a school-based intervention study that applied quasi-experimental design. There were three phases in the study: the pre-intervention survey; the intervention; and the post-intervention survey.

3.4.2 Study population

The main study population consisted of primary school children from 8 to 11 years of age in the rural district of Chuong My in Hanoi, Vietnam, where there had been no previous survey of tobacco use, and no previous tobacco intervention program. In addition, the study recruited the following group as its population:

- Children's parents
- Teachers teaching Grades 3, 4 and 5 and the principal(s) of the selected primary schools
- Head of the Department of Education and Training in the Chuong My district

3.4.3 Study site: the Chuong My district

Chuong My is one of the rural districts of Hanoi, the capital of Vietnam; it has been part of Hanoi under a Resolution of the National Assembly since 1 August 2008[2] (The National Assembly of Vietnam, 2008c). The district is south-west of the original Hanoi Capital City, and is 20 km away from the city centre. Surrounded by several other districts of Hanoi, having a border with a district of another mountainous province, and having two national roads running through it, Chuong My district has become one of central points in the transportation network from Hanoi to provinces in the north-west and the Red River Delta of Vietnam (Chuong My Electronic Portal, 2010).

According to information provided by the Chuong My Statistics Office (2012), the total area of the district is 232.41 km^2, with a population of 301,157 in the year 2011 and a crude birth rate of 1.16%. The population density was 1,296 people per km^2. The total number of households in the district in 2011 was 68,409. The major ethnic group in the district is Kinh.

The topography of the district is a mix of plain, and half-mountain–half-plain areas. Different government offices and various factories and companies are located in the district, and have recruited a large number of office workers and labourers. In addition, a large number of people are involved in farming work, traditional village handicrafts, and trade. The three main categories of occupations in the district are farming, government officers, and non-government employees or self-employed people (most of whom are employed in farming) (Chuong My Electronic Portal, 2010).

The district has a total of 30 rural communes and 2 towns, as seen in the map in Figure 3.3. Each commune has at least one kindergarten school, one primary school and one secondary school. However, the number and type of schools in each commune depend on the population. Some large communes with high populations might have at least two of each type of school: these include Chuc Son town, Xuan Mai town, Hoang Van Thu commune, Tran Phu commune, Nam Phuong Tien commune and Thuy Xuan Tien commune (Chuong My Electronic Portal, 2010, Chuong My Department of Education and Training, 2011).

[2] Before 1 August 2008, the Chuong My district belonged to HaTay Province. The whole province of HaTay was merged into Hanoi on 1 August 2008 under Resolution Number 15/2008/NQ-QH12 of the National Assembly.

Figure 3.3 Map of Chuong My district (Chuong My Electronic Portal, 2010)

The district has a total of 39 primary schools. During the school year 2011–2012, there were 1,193 primary school teachers and 23,083 primary school children (11,320 boys and 11,763 girls) in the district. Almost all the primary school children were aged 6 to 11, although some children were older (Chuong My Statistics Office, 2012, Chuong My Department of Education and Training, 2011) (up to 14 years, which is the maximum age for primary school children) (MOET, 2000).

3.4.4 Selection of primary schools

According to the WHO (2001), communities selected for an intervention study should be as similar as possible; therefore, the following criteria were applied for screening the communes included in the study as suggested by various authors (Salazar et al., 2006, DiClemente et al., 2006, Kalton, 1983):

- not in the two towns of the district
- not adjacent to the two towns of the district
- having similar socio-demographic-economic characteristics
- not having the national roads running through the communes
- not having boundaries with other districts/provinces
- having only one primary school in the commune, and a similar number of classes per school
- having children who spend all day at school.

Only three primary schools met all the above criteria: Quang Bi, Tot Dong and Trung Hoa. There was only one primary school in each commune, with 28 to 29 classes per school. The number of pupils in each school ranged from approximately 750 to 950. The socio-demographic-economic conditions of the three communes were similar (Chuong My Statistics Office, 2012).

The three primary schools were then randomly selected[3] as follows:

- full intervention school: Quang Bi Primary School
- partial intervention school: Tot Dong Primary School
- control school: Trung Hoa Primary School.

From this point, children from Quang Bi Primary School were called the full intervention group; those from Tot Dong Primary School were called the partial intervention group; and those from Trung Hoa Primary School were called the control group.

The parents/legal guardians of children in the full and the partial intervention schools received the same information regarding the harmful effects of SHS to children's health, information about the content of the intervention programs and what children could do at home to prevent themselves from being exposed to SHS. However, only the children in the full intervention school received the intervention activities (attending lectures on SHS and its harmful effects to children's health, participating in activities against exposure to SHS such as role plays in class, games, quiz, drawing pictures etc.).

3.4.5 The three selected communes

Quang Bi commune (full intervention school)

The Quang Bi commune is 7 km south of the heart of the Chuong My district, and is 7.18 km^2 in area. The population was 11,395, with 2,788 households, and the population density was 1,587 people per km^2 (Chuong My Statistics Office, 2012). The main occupations of local people are farming and self-employment. Others work as government officers and staff at the commune and the district levels, and some work for companies and factories in the district.

There were 757 children of primary school age in the commune in the school year 2011–2012, of whom 734 (96.9%) attended primary school (Chuong My Statistics Office, 2012, Chuong My Department of Education and Training, 2011). Of these 734 primary school children, 359 were

[3] The Principal Investigator wrote the name of each primary school on a piece of paper and put all three pieces of paper in a box. The box was shaken and the pieces of paper were retrieved with the first piece allocated as the full intervention school, the second as the partial intervention school and the third as the control school.

boys and 385 were girls. The number of children in Grade 3 through to Grade 5 in Quang Bi Primary School was 445 (226 boys and 219 girls). The number of primary school teachers was 40 (Chuong My Department of Education and Training, 2011).

Tot Dong commune (partial intervention school)

The Tot Dong commune is 8.5 km west of the centre of Chuong My district, and is 8.44 km^2 in area. The total population of the commune in the census year 2009 was 12,769 people, with 2,652 households, and the population density was 1,513 peo ple per km^2 (Chuong My Statistics Office, 2012). Tot Dong commune is next to Quang Bi commune on its south-east border, and is separated from the neighbouring commune by a small local river called the Bui River, which is a branch of a large river in the Red River Delta Region. Similarly to the Quang Bi commune, local people in the Tot Dong commune mainly do farming work or are self-employed such as running their own business at home, or local government offices (Chuong My Electronic Portal, 2010, Chuong My Statistics Office, 2012).

Tot Dong Primary School had 987 children aged from 6 to 11 (479 boys and 508 girls) in the school year 2011–2012, accounting for 98.1% of all children of primary school age in the commune. The number of children in Grade 3 through to Grade 5 was 550 (288 boys and 262 girls). The number of primary school teachers was 48 (Chuong My Statistics Office, 2012, Chuong My Department of Education and Training, 2011).

Trung Hoa commune (control school)

The Trung Hoa commune is 7.5 km south-west of the centre of the Chuong My district. The commune has an area of 5.95 km^2. In 2011, the population was 9,620, with 2,059 households, and the population density was 1,617 people per km^2 (Chuong My Statistics Office, 2012). Trung Hoa commune is next to Tot Dong at its south-east border and is also separated from the Tot Dong commune by the Bui River (Chuong My Electronic Portal, 2010). Most of the local people are farmers, government officers and nongovernment employees such as being self-employed in commercial works or small business.

Trung Hoa Primary School had 796 children (388 boys and 408 girls) in the school year 2011–2012, accounting for 95.4% of children of primary school age in the commune. The number of children in Grade 3 through to Grade 5 was 503 (261 boys and 242 girls). The number of primary school teachers was 42 (Chuong My Statistics Office, 2012, Chuong My Department of Education and Training, 2011).

3.4.6 Timeline of the study

The pilot study was undertaken in November 2010 (Section 3.2).

The main study was implemented in three phases, from August 2011 to May 2012:

- The pre-intervention survey (quantitative data collection by SAQ completed by children) was conducted in August 2011.
- The intervention was implemented from November 2011 to April 2012.
- The post-intervention survey (quantitative data collection by SAQ completed by children and qualitative data from focus group dicussions and in-depth interviews) was undertaken in May 2012.

3.4.7 Sample size for the pre- and the post-intervention surveys

The sample size for this study was calculated using the following formula of Lwanga and Lemeshow (1998) using software sample size 2.0 of WHO:

$$n = \frac{\left\{ z_{1-\alpha/2}\sqrt{2P_2^*(1-P_2^*)} + z_{1-\beta}\sqrt{P_1^*(1-P_1^*) + P_2^*(1-P_2^*)} \right\}^2}{\left(P_1^* - P_2^*\right)^2}$$

Where:

- n = sample size
- Level of significance = 5%, z = 1.96
- Power of test = 90%
- P1: anticipated probability of children exposed to SHS indoors before the intervention: 67.5%*
- P2: anticipated probability of children exposed to SHS indoors after the intervention: 47.7%*

* Source: Nga and Ha (2007).

After the calculation, the sample size was estimated as 105 children currently living with smoker(s) per school. Based on the proportion of 60% children reported to live with smoker(s) at home in the district (Huong et al., 2011), the required number of children studying grades 3 through 5 in each school was nearly 170. To address the issues of non-participation, withdrawals and a less successful intervention, the study selected all children in the three schools from Grade 3 onwards, i.e. children from 8 to 11 years of age (n = 1,498 children in all three selected schools).

3.4.8 Data collection instruments

Children were required to fill in the self-administered questionnaire (SAQ) in their classroom setting at the pre- and post-intervention. The SAQ includes 5 sections. Section A consists of questions on children's personal information (school, age, grade, gender, number of sibling and their parents' occupations (farmer/government employee/self-employed)). Section B includes questions on: children living with smokers, the relationship of smoker(s) to children, whether the smokers smoke in the home or outdoors, whether children were exposed to SHS at home during the week before the data collection. Section C examines children's knowledge on the harmful effects of SHS to children's health. Section D measures children's attitudes on SHS exposure prevention and Section E includes questions measuring children's practices on SHS exposure prevention (see Appendix 1 for more detail).

In addition, focus group discussions and in-depth interviews with children, teachers, parents, and the director of the District Department of Education and Training were used to collect qualitative data at the conclusion of the intervention (see Appendix 2 for the guidelines for these discussions and interviews).

3.4.9 Major variables

The following variables were assessed/measured, recorded and analysed, both at pre-intervention and post-intervention:

- parental smoking pattern with respect to smoking indoors/ outdoors before and after the intervention
- children's self-reported exposure to SHS at home before and after the intervention
- children's knowledge on the harmful effects of SHS before and after the intervention
- children's attitudes on the avoidance of SHS before and after the intervention
- children's practices on the avoidance of SHS before and after the intervention
- associations between children's reported exposure to SHS, the place where parents smoke, and children's KAP on SHS and selected factors (including school, grade/age, gender, number of siblings, whether children are living with smokers, number of smokers living in the home).

In addition, children's capacity to persuade parents who smoke not to smoke in the home was also measured during the focus group discussions with different target groups including teachers, children, and parents of children.

3.4.10 Study protocol

This section presents the protocol for conducting the main study only. The study was conducted in three phases: pre-intervention survey, intervention, and post-intervention survey. Permission to implement the study was sought from the Head of the Department of Education and Training of the Chuong My district in 2010 (see Appendix 3).

Phase 1. Pre-intervention survey

All children in Grade 3 to Grade 5 in three primary schools (Quang Bi, Tot Dong and Trung Hoa) in Chuong My district were invited to participate in the pre-intervention survey.

Parents of children in the control school received only a basic participant information sheet (PIS) and a consent form (see Appendix 4.1 and 5 as examples). Parents of children in the partial intervention and full intervention schools received a detailed PIS including information on the harmful effects of SHS on child health, why children should be protected from SHS, and what children might be able to do at home to prevent their exposure to SHS, as well as a consent form (See Appendix 4.1 as an example). In addition, mothers of children in the full intervention school also received an additional PIS to call for their support if children faced difficulties in persuading their fathers or other smokers sharing the house with them to smoke outdoors (see Appendix 4.2 as an example).

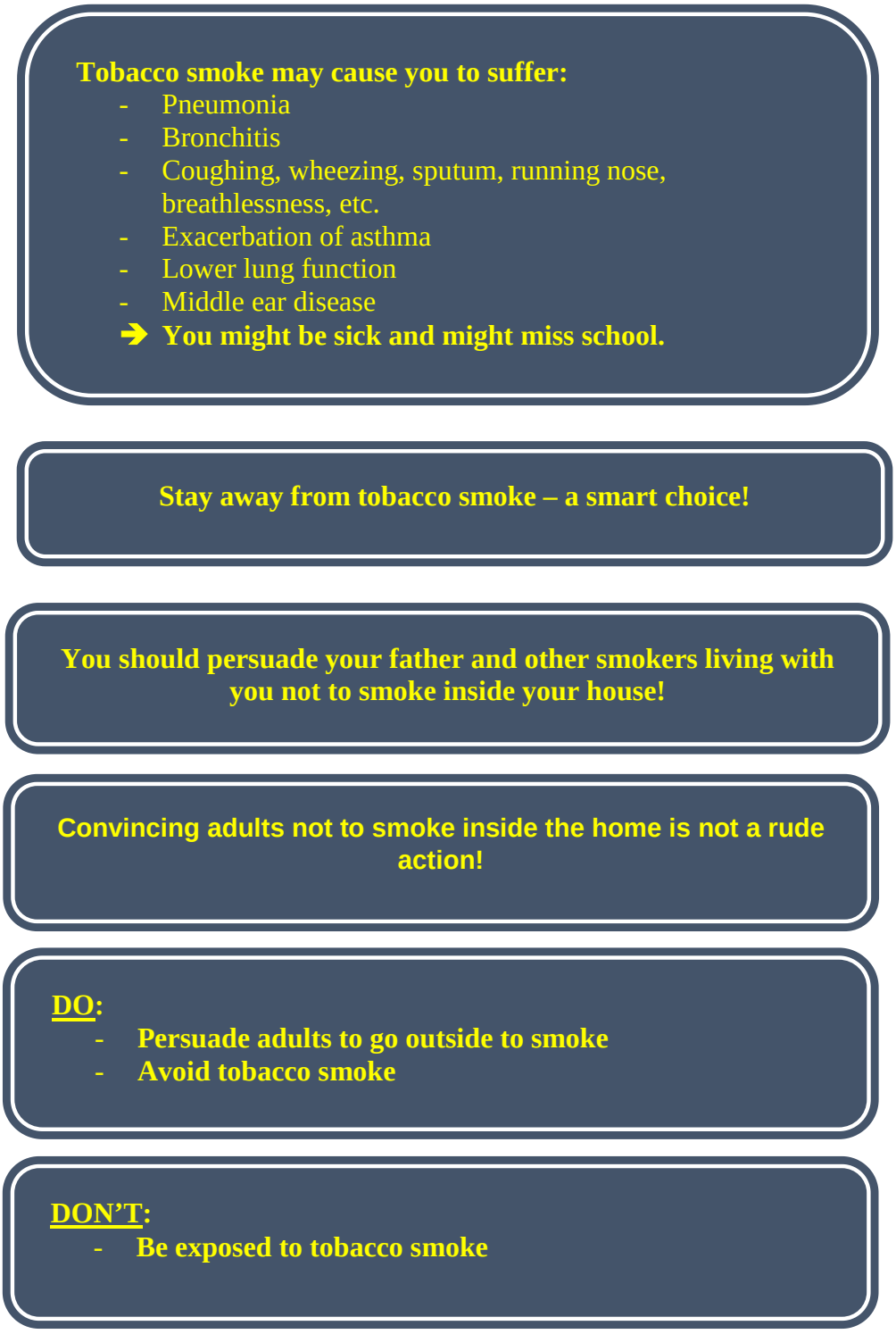
In the classroom setting, with teachers' presence, self-administered questionnaires were distributed to all children for whom consent had been obtained. The teachers helped distribute the questionnaire to their pupils and asked their pupils to fill in the form. Written instructions on how to fill in the form were attached to the questionnaire to avoid teachers' instruction bias as much as possible. In parallel, audio-instructions were played in class, so that all the participating children could hear the same voice in the same tone instructing them how to fill in the questionnaire. The content and delivery of the audio-instructions were based on results of the pilot study using children from grades 3, 4 and 5. All teachers who participated in the surveys undertook a workshop on the questionnaire that was facilitated by the principal investigator. These teachers were able to help clarify the content/meaning of the questions and also clarify any difficulties in understanding the audio-instructions.

The pre-intervention survey was conducted in August 2011, when children had just returned to school after their summer holidays and started the summer study before the 2011–2012 school year.

Phase 2. Intervention

The intervention commenced at the full intervention school in November 2011 and ended in April 2012.

The key messages in the intervention program were presented as follows:



The intervention materials were designed to include colourful pictures and text presenting the above key messages. The pictures were created by an artist and tested for appropriateness to local contexts before use in the intervention program. The intervention materials included:

- Two A1-size posters that could be hung in the classroom. One poster described SHS and its harmful effects on children's health, and the other introduced some typical examples of persuading a father or grandfather who smokes to smoke outside in different home settings (see Appendix 6).
- A teacher's handbook that included two sections. The first section introduced SHS and its harmful effects on children's health. The second section presented information on the teaching of persuasion skills to children, and some templates (using the key messages above) that children might use at home if they need to persuade smokers to smoke outdoors (see Appendix 7).

On two occasions prior to the intervention, the teachers and selected children from the full intervention school were given an opportunity to review the intervention materials and commented on its suitability (see Figure 3.4). Some minor adjustments on the basis of the discussions with teachers and children were made (such as change of picture, change of colour of picture, change of font and font size).

Figure 3.4 Discussion of intervention materials (design and content) with teachers and primary school children. Left: discussion of intervention materials (design and content) with teachers. Right: discussion of content and design of posters with primary school children.

After the design and adjustment of intervention materials, a one-day training workshop was conducted with 17 teachers of Grade 3 to Grade 5 in the full intervention school at the end of October 2011. These teachers were responsible for teaching all subjects in each class, including the intervention content. The principal investigator for the study was the facilitator of the workshop, with the assistance of a lecturer working in the Social Science Faculty of the Hanoi School of Public Health.

The training was divided into two different sessions. In the morning session, teachers were informed about, for example, the composition of SHS, the harmful effects of SHS, and what children could do to avoid exposure to SHS at home. After each section in the book, there was a small box highlighting the core content of the section and a question that teachers could use when teaching their children (see Appendix 7 for more detail).

In the afternoon session, teachers were introduced to information about the smoking habits of Vietnamese people and the circumstances that might lead to smokers becoming angry when being persuaded not to smoke in the home. This section of the workshop was on facilitating children's attitudes and practices of persuading/negotiating with their parents about smoking. Teachers were required to use role-play in class so that children would experience different scenarios, and would be able to apply different methods of persuasion. Similarly to the first session, this session was designed with core content and questions for teachers to use in class. Some typical templates for negotiation/persuasion scenarios were also printed in the handbook so that teachers could deliver them to children and advise them to try to use some at home. In the teaching session, teachers were also required to remind children to seek their mother's help in persuasion or negotiation with fathers/grandfathers who smoke and with other smokers at home (See Appendix 7 for more detail).

Teaching about SHS and how to persuade adults not to smoke in the home was conducted weekly for 6 months (November 2011 to April 2012) in every class in the full intervention school from Grade 3 to Grade 5. Lecturing and role-plays were used in the teaching process. Based on the content of the teacher's handbook, all role-play scenarios used in the intervention were developed by and shared among teachers of the school. The principal investigator and a staff member from the Department of Education and Training of the Chuong My district (Division of Primary Education) provided monthly supervision to the full intervention school.

A competition game was organized for 26 March 2012 as part of a ceremony celebrating the establishment of the Vietnamese Youth Union, with the voluntary participation of 50 children and the attendance of the whole school. The topic of the competition was 'Understanding the harmful effects of SHS on children's health'. In addition to the competition game, a drawing competition on the harmful effects of SHS and on persuading adults not to smoke in the home was launched by the General Secretary of the Youth and Pupil Council of the school. A total of 230 pictures were selected from different classes to send to the Council. The Council selected the three best pictures to receive an award on the competition day (26 March 2012) (see Figure 3.5 and Appendix 9).

Figure 3.5 Primary school children in the full intervention school looking at the prizewinning pictures in the drawing competition

Phase 3. Post-intervention survey

The post-intervention survey was conducted in May 2012. A self-administered questionnaire (SAQ) was given to each child in the three selected primary schools. This SAQ was identical to the one used pre-intervention; however, children could skip the questions in Section A (Background Information). In addition, children in the full intervention school were required to answer additional six questions. These questions were about the intervention activities that children attended at the school and what they did at home in order to prevent their exposure to SHS, and how their parents reacted when children were persuading them not to smoke in the home (see Appendix 1).

In addition, focus group discussions and in-depth interviews were conducted at all three schools in May 2012 after the post-intervention quantitative survey (See Appendix 2). In the full intervention school, focus group discussions were conducted with teachers, children, fathers who voluntarily smoked outside in response to their children's request, and mothers. Fathers who refused to smoke outdoors in response to their children's request were also invited for focus group discussion. However, only one agreed to participate, and so an in-depth interview was conducted instead.

In the partial intervention and the control schools, focus group discussions were conducted with children. In relation to fathers of children at these two schools, the principal investigator could only meet fathers in individual cases because they refused to participate in a FGD, and therefore in-depth interviews were conducted instead.

Two focus group discussions were conducted with children at each school. The numbers of FGDs were limited due to time pressure on the children to prepare for the end-of-year final exam.

The principal investigator also decided to conduct IDIs with the Head of the Department of Education and Training in the Chuong My district and the Principal of the full intervention school to seek their comments for sustaining the program. See Appendix 2 for the guidelines for the group discussions and in-depth interviews.

The purpose of undertaking focus group discussions and in-depth interviews at the end of the intervention and after the post-intervention quantitative survey was to seek ideas from participating members on the activities that children did at home during the intervention and the strengths and the weaknesses of the program at school- and at home-based settings. Furthermore, suggestions for better intervention activities were also sought from these target groups. Based on the information given by different people participating in the FGDs and the IDIs, challenges and strong points of the intervention program could be identified for the consideration of widening the program into other areas.

In total, 9 FGDs and 6 IDIs were conducted (see Table 3.1).

Table 3.1 Numbers of focus group discussions and interviews with selected target groups

		Full intervention school	**Partial intervention school**	**Control school**	**Other**
Fathers who smoked and agreed to smoke outdoors	FGD	1	N/A	N/A	
Fathers who smoked but refused to smoke outdoors	IDI	1	N/A	N/A	
Fathers who smoked	IDI	0	2	1	
Mothers	FGD	1	N/A	N/A	
Teachers	FGD	1			
Children in Grade 3	FGD	1	0	1	
Children in Grade 4 and 5	FGD	1	0	0	
Children in Grade 4	FGD	0	1	0	
Children in Grade 5	FGD	0	1	1	
Head of the Department of Education and Training in the Chuong My district	IDI				1
Principal of the full intervention school	IDI	1			

N/A: Not available

3.4.11 Scoring and assessing children's knowledge, attitudes and practices

The scoring and assessment of children's knowledge, attitudes and practices are presented in Table 3.2. In the knowledge section (Section C) of the self-administered questionnaire (see Appendix 1), there are different questions related to the harmful effects of smoking on the health of smokers (C1 to C2) and the harmful effects of SHS on children's health (C3 to C8). The purpose of the two different types of questions was to avoid children's misunderstanding of the harmful effects

of SHS on their health. Such misunderstanding was seen in the pilot study, where many children believed, for example, that ‘discoloured teeth’ and ‘bad breath’ were harmful effects of SHS on their health (Huong et al., 2011). However, during the analysis of data, children’s knowledge was assessed using only the questions regarding SHS and its harmful effects on children’s health (questions C3 to C8).

Table 3.2 Scoring and assessment of children's KAP, pre- and post-intervention

Questions (children were required to circle one most appropriate answer in each question)	**Answer**	**Score**	**Assessment**
Section C. Knowledge			
C3. Is tobacco smoke harmful to your health?	a. Yes b. No c. Not sure	0 for no/not sure. Children who circled 'no' or 'not sure' were required to move to section D 'Attitudes'	Children who circled 'yes' continued on to answer C4 to C8
C4. Can tobacco smoke cause children to cough?	a. Yes b. No c. Not sure	+1 for yes, 0 for no/not sure	Children's knowledge score ranged from 0 to +9 and was categorised as follows: - Level 1 (Poor): 0 to +2 - Level 2 (Fair): +3 to +4 - Level 3 (Good): +5 to +9
C5. Can tobacco smoke cause children to wheeze?	a. Yes b. No c. Not sure	+1 for yes, 0 for no/not sure	
C6. Can tobacco smoke cause children to have difficulty in breathing?	a. Yes b. No c. Not sure	+1 for yes, 0 for no/not sure	
C7. Can tobacco smoke cause children to produce sputum?	a. Yes b. No c. Not sure	+1 for yes, 0 for no/not sure	
C8. Can you name any other diseases causes by tobacco smoke? (In this question, children were encouraged to list as many diseases as they could.)	Correct diseases/symptoms expected to be filled by children include: - Pneumonia - Bronchitis - Middle ear disease - Asthma - Lung function deficit	+1 for each correct disease/symptoms mentioned	
Section D. Attitudes			
D1. What do you feel when someone smokes inside your home?	a. ☺ b. 😐 c. ☹	a: 0; b: 0; c: +1	Children's attitudes score ranged from 0 to +9 and was categorised as follows: - Level 1 (Poor): 0 to +3 - Level 2 (Fair): + 4 to +6 - Level 3 (Good): + 7 to +9
D2. What do you feel when someone smokes in front of you?	a. ☺ b. 😐 c. ☹	a: 0; b: 0; c: +1	
D3. What do you feel when your father smokes inside your home?	a. ☺ b. 😐 c. ☹	a: 0; b: 0; c: +1	
D4. What do you feel when your father smokes in front of you?	a. ☺ b. 😐 c. ☹	a: 0; b: 0; c: +1	
D5. Do you agree with the statement 'Inhalation of tobacco smoke might cause children to be sick?'	a. ☺ b. 😐 c. ☹	a: +1; b: 0; c: 0	
D6. Do you think that you can persuade adults not to smoke in the home?	a. ☺ b. 😐 c. ☹	a: +1; b: 0; c: 0	
D7. Do you believe that, after your persuasion, adults will go outside to smoke?	a. ☺ b. 😐 c. ☹	a: +1; b: 0; c: 0	
D8. What do you feel if adults do not pay attention to your persuasion?	a. ☺ b. 😐 c. ☹	a: 0; b: 0; c: +1	
D9. Do you agree with the statement 'Children persuading adult	a. ☺ b. 😐 c. ☹	a: +1; b: 0; c: 0	

smokers not to smoke in the home is not a rude action'?			
Section E. Practices (practices were only measured among children who lived with smokers in their homes)			
E1. What do you do when you have to breathe in tobacco smoke?	a. Stay where there is tobacco smoke	0	Children's practices score ranged from 0 to +5 and was categorised as follows: - Level 1 (Poor): 0 to +2 - Level 2 (Fair): + 3 to +4 - Level 3 (Good): + 5
	b. Go away from tobacco smoke	+1	
	c. Other (please specify)[4]: for example, try to persuade smoker(s) not to smoke	+1	
E2. What do you do when you see someone smoking inside your home?	a. Stay where there is tobacco smoke	0	
	b. Go away from tobacco smoke	+1	
	c. Other (please specify): for example, try to persuade smoker(s) not to smoke	+1	
E3. Have you ever spoken to your parents and other smokers in your family about the harmful effects of tobacco smoke?	a. Yes	+1	
	b. No	0	
	c. I don't remember	0	
	d. My parents/other adults in my family don't smoke	Removed	
E4. Have you ever spoken to your parents and other smokers in your family about not smoking inside your home?	a. Yes	+1	
	b. No	0	
	c. I don't remember	0	
	d. My parents/other adults in my family don't smoke	Removed	
E5. What did your parents and other smokers in your home do when you spoke to them about not smoking inside the home?	a. Went outside to smoke	+1	
	b. Continued smoking inside the home	0	
	c. I don't remember	0	
	d. My parents/other adults in my family don't smoke	Removed	

[4] If children can write options such as 'try to persuade smoker(s) not to smoke in the home' or 'persuade smoker(s) not to smoke' or 'ask smoker(s) not to smoke' or 'ask smoker(s) go outside to smoke' in the option 'Other', they will get +1 mark for that answer

3.4.12 Data management

Quantitative data

- Data, after being collected, were cleaned and entered into a computer using Epidata software, version 3.1. Double-entry verification was used on a random sample of 20% of the returned survey questionnaires to ensure the correct entry of data. A coding manual was developed for use during data entry.
- Frequency distributions of all variables were undertaken and checked for invalid responses and the degree of missing data.
- Inconsistent responses (if any) were checked with the original questionnaire.
- For the pre-intervention survey, each returned questionnaire was given a five-digit ID number. The first digit represented the school (1 for the full intervention school, 2 for the partial intervention school and 3 for the control school); the next two digits represented the children's class (Grade 3, 4 and 5); and the last two digits represented children's names in alphabetical order in their class. Children kept the same ID number for the post-intervention survey.
- All the data were taken into the software Statistical Package for the Social Sciences (SPSS), version 19.0, for data analysis. The entry file from the pre-intervention survey was merged with the file for the post-intervention survey by using the ID number given to each child.
- All hard copies of the returned questionnaires were kept in a locked cabinet, and only the principal investigator had access to the cabinet. All the electronic data, including back up data, was password protected.

Qualitative data

- All the 9 FGDs and 6 IDIs were audio-recorded, and manual notes were taken by the principal investigator and her assistant.
- Data was transcribed into Microsoft Word in Vietnamese.
- All qualitative data, including back up data was kept in a password-protected laptop.

3.4.13 Data analysis

Quantitative data

The demographic characteristics of children and their parents' occupations were analysed and compared between the three selected schools. Chi-square tests were used for proportion analysis (relating to the proportion of children in each grade, gender, number of siblings, parents'

occupations). One-way ANOVA tests were used to compare the mean age of children in each grade in three schools. These analyses were performed only on data collected pre-intervention.

The proportion of children at the three schools who lived with smokers, the proportion of children with fathers who smoked indoors or outdoors, and the percentage of children who were exposed to SHS pre- and post-intervention were analysed. Chi-square tests were utilised in this analysis.

Mean scores for children's knowledge, attitudes and practices were compared pre- and post-intervention. KAP of children were also categorised in different levels as mentioned above. The following tests were used in the analysis:

- One-way ANOVA tests and LSD post hoc tests were performed to test the differences in KAP mean scores of children in the three selected schools pre- and post-intervention.
- The paired-samples t-test was used to compare mean scores of children's KAP at each school, pre- and post-intervention.
- The chi-square test was used to identify any differences in children's KAP pre- and post-intervention.

Binary logistic regressions applying the backward stepwise method (Wald method) were performed to identify possible associations between selected factors (all were categorical variables) and the dependent variables (exposure to SHS, KAP of children).

- Before the binary logistic regression was run, several new variables were created through the paired matching process in SPSS, version 19.0. Each individual was compared in terms of the following, pre- and post-intervention: their self-reported exposure to SHS at home; their reported occurrence of smoking in the home or outdoors by their fathers/other smokers in their families; their knowledge of the harmful effects of SHS on children's health; their attitudes and practices on avoidance of SHS exposure.
- The process of creating new variables was as follows:
    - The self-reported exposure of children to SHS at home and post- vs pre-intervention:

Pre-intervention	*Post-intervention*	*New variable:* ***Children's exposure to SHS post- vs pre-intervention***
Exposed to SHS	Non-exposed to SHS	Non-exposed
Non-exposed to SHS	Non-exposed to SHS	Remained non-exposed
Non-exposed to SHS	Exposed to SHS	Exposed
Exposed to SHS	Exposed to SHS	Remained exposed

The two categories to be used in the model of the new variable '***Children's exposure to SHS post- vs pre-intervention***' were: 'Non-exposed/Remained non-exposed' versus 'Exposed/Remained exposed'.

- The place where children's fathers and other smokers in the family smoke (in the home or outdoors) pre- and post-intervention:

Pre-intervention	*Post-intervention*	*New variable:* ***Fathers' or others' smoking places post- vs pre-intervention***
Smoked in the home	Smoked outdoors	Outdoors
Smoke outdoors	Smoked outdoors	Remained outdoors
Smoke outdoors	Smoked in the home	In the home
Smoke in the home	Smoked in the home	Remained in the home

The two categories to be used in the model of the new variable '***Fathers' or others' smoking places post- vs pre-intervention***' were: 'Outdoors/ Remained outdoors' versus 'In the home/ Remained in the home'.

- KAP levels of children pre- and post-intervention:

Pre-intervention	*Post-intervention*	*New variable: Children's KAP level post- vs pre-intervention*
Poor	Good	Good
Fair	Good	Good
Good	Good	Remained good
Fair	Fair	Not changed → Not good
Fair	Poor	Worse
Poor	Poor	Remained poor
Poor	Fair	Not changed as expected → Not good
Good	Fair	Worse
Good	Poor	Worse

The two categories to be used in the model of the three new variables '***Children's KAP level post- vs pre-intervention***' were: 'Good/Remained good' versus 'Not good/Remained poor/ Worse'.

Qualitative data

The qualitative data were manually analysed. Themes and sub-themes were identified through the utilisation of open coding. This process was undertaken by breaking down, examining, and conceptualising data (Strauss and Corbin, 1998). Texts were then organised and analysed, and quotations were extracted. Analytic approach was undertaken with the thematic analysis (Morse and Field, 1996).

Data was analysed by reading and re-reading the raw data files for content and emerging themes. Open coding was conducted by coding, comparing and classifying individual transcripts into initial conceptual categories. Different portions of narrative were assigned to categories complete with participant identifiers. Various sections of narrative were originally assigned to multiple categories.

3.4.14 Control of bias

A number of strategies were used to minimise bias during data collection. Firstly, the principal investigator had referred to the literature to design a questionnaire that was most appropriate for the cognitive level of children aged 8 to 11 (Bell, 2007, Borgers et al., 2003). A pilot test was conducted in November 2010. One of its purposes was to test whether the content of the self-administered questionnaire was appropriate to the understanding of primary school children in Grade 3 through to Grade 5. The questionnaire was revised according to the findings of the pilot study (Huong et al., 2011).

During data collection pre- and post-intervention, children in all three schools were required to fill in the questionnaire by listening to the same instructions by the principal investigator from an audio-tape recorder. This helped to control bias that could result from different instructions by different teachers in the three schools. Data was cleaned carefully before being entered into the software Epidata 3.1. To ensure the accuracy of data entry, a random sample of 20% of the entry data was checked. For qualitative data, the principal investigator conducted the data collection herself, with the assistance of a newly qualified Bachelor of Public Health graduate.

During the time of the study, from August 2011 to May 2012, there was no other specific intervention on tobacco control conducted in the three communes, apart from general government

communications on tobacco control through national television or radio; therefore, the study was not affected by any other intervention program on tobacco control in general, and on SHS in particular.

3.4.15 Ethical considerations

Ethical approval of the pilot study was granted by the Ethics Committee of the School of Human Movement Studies (University of Queensland) (ethical clearance number HMS10/0411 dated 11 November 2010) (Appendix 8.1)

Ethical application of the full study was first submitted to the Institutional Review Board of the Hanoi School of Public Health (HSPH) and then to the Behavioural and Social Sciences Ethical Review Committee of the University of Queensland for ethical approval. The ethical clearances were granted by both the HSPH and the University of Queensland Behavioural and Social Sciences Ethical Review Committee (ethical clearances numbers 008/2011/YTCC-HD3 dated 10 March 2011 (Appendix 8.2) and 2011000250 dated 25 March 2011 (Appendix 8.3) respectively).

Official permission to conduct the study was obtained from the Head of the Department of Education and Training in the Chuong My District (see Appendix 3). A participant information sheet (PIS) was sent to the parents of every child recruited for the study. Parents from the full intervention school and the partial intervention school received the same PIS, which provided detailed information about the study, about SHS and its harmful effects on children's health, and about the need to smoke outdoors to protect children from SHS exposure (See Appendix 4.1 as an example). In contrast, the PIS sent to parents of children in the control school was simple and only informed parents about the study to be conducted at the school. Mothers of children in the full intervention school also received a separate PIS to call for mothers' support if children faced difficulties in negotiating with smoker(s) (Seep Appendix 4.2) At each selected school, permission to involve primary school children was obtained from their parents through written consent forms (See Appendix 5 as an example).

Totally, there were 1,415 consent forms obtained from children's parents/legal guardians.

Chapter 4 Children's Exposure to Secondhand Smoke and their Knowledge, Attitudes and Practices on Secondhand Smoke

4.1 Introduction

This chapter provides information about children's self-reported exposure to secondhand smoke (SHS) at home, their knowledge of the harmful effects of SHS, and their attitudes to and practices for avoiding SHS. Information about the general characteristics of the study population pre-intervention is also presented in this chapter. (Such information was not collected post-intervention because the study lasted for only one school year (i.e. 9 months)).

Three of the study hypotheses will be addressed in this chapter:

1. After the intervention, the exposure of children to SHS will decrease significantly.
2. After the intervention, parents of children will significantly change their smoking pattern from inside the home to outdoors.
3. After the intervention, children's KAP on SHS will have improved significantly.

Basic statistical tests, such as the chi-square test, one-way ANOVA tests, and paired-sample t-tests, were applied to determine the differences by grade, gender, number of siblings, mean age, and parents' occupations. Regarding children's exposure to SHS and their parents' smoking pattern, chi-square tests were used to analyse the differences between the proportion of parents smoking in the home pre- and post-intervention; the differences between the proportion of children exposed to SHS pre- and post-intervention; and the associations between fathers who smoke, children's exposure to SHS, and some demographic characteristics, including the occupations of the children's parents. One-way ANOVA tests were used to determine if there were any differences in mean scores of children's KAP pre- and post-intervention, and differences in the subtractions of children's mean scores post-intervention versus pre-intervention. Paired-sample t-tests were applied to identify any changes in mean KAP scores between pairs in each school post- versus pre-intervention. Chi-square tests were used to analyse variances in the levels of children's KAP on the harmful effects of SHS and on their prevention of SHS exposure at home. The levels of significance were set at a p value less than 0.05.

Binary logistic regressions were applied to identify possible associations between children's self-reported exposure to SHS, the places where their parents smoked and their KAP on SHS and demographic factors and other factors (school, grade, gender, number of siblings, father and mother occupations, currently lived with smokers).

Qualitative data are analysed and presented in this chapter to explain the quantitative results, provide context, and suggest explanatory hypotheses.

4.2 Children recruited for the study

Table 4.1 represents the characteristics of the recruited children. In total there were 1,498 primary school children in Grades 3, 4 and 5 in the three selected schools. At the time of the pre-intervention survey in August 2011, 83 children were absent from class for different reasons, mainly sickness. Therefore, a total of 1,415 children participated in the pre-intervention survey, with consent form obtained from their parents. The number of valid questionnaires returned by children was 1,389, making the response rate 98.2%. For the post-intervention survey in May 2012, among those with consent form from their parents at the pre-intervention, 12 children were absent from class, and therefore 1,403 participated in the survey. The response rate was 96.7%. There was no significant difference in response rates between the three schools either at pre-intervention or post-intervention.

Table 4.1 Number of primary school children in all three schools who participated in the study

	Pre-intervention					**Post-intervention**				
	Total children Grades 3 to 5	Absent	Number of children who participated	Number of children who returned valid questionnaires	Response rate (%)	Total children Grades 3 to 5**	Absent	Number of children who participated	Number of children who returned valid questionnaires	Response rate (%)
Full intervention school	445	29	416	409	98.3	416	4	419	408	97.3
Partial intervention school	550	28	522	512	98.1	512	5	512	492	96.1
Control school	503	26	477	468	98.1	477	3	472	457	96.8
Total	**1,498**	**83**	**1,415***	**1,389**	**98.2**	**1,415**	**12**	**1,403**	**1,357**	**96.7**

Note:

**: Number of children in class on the date of data collection with consent form obtained from their parents.*

***: Children with consent form obtained from their parents at the pre-intervention.*

A pair-matching process using children's unique identification (ID) numbers was undertaken using SPSS version 19.0 software in all three schools. The two datasets (pre- and post-intervention) were merged by ID number and re-checked by children's and parents' names. After the pair-matching process, 101 of the 1,389 valid returned pre-intervention questionnaires were found not to match any cases in the post-intervention survey, while 69 of the valid 1,357 post-intervention cases did not match any pre-intervention cases. In total, there were 1,288 matched pre- and post-intervention cases, and these were used for the quantitative data analysis in this study. The number of children in each school and in each grade who were pair-matched is presented in Table 4.2.

Table 4.2 Number of primary school children (by school and by grade) (pair-mactched)

		Time	
		Pre-intervention	**Post-intervention**
School			
	Full intervention	397	397
	Control	407	407
	Partial intervention	484	484
Total		**1,288**	**1,288**
Grade			
	3	388	388
	4	429	429
	5	471	471
Total		**1,288**	**1,288**

4.3 Characteristics of the study participants

Table 4.3 shows the demographic characteristics of the children recruited for the study from the three selected schools. The proportion of children in Grade 5 seems higher than those in Grade 3 and 4 (36.6% vs 30.1% and 33.3% respectively); however, no significant difference was found in the proportion of children in different grades in all three schools ($p > 0.05$). The percentage of boys and girls participating in the study was 50.3% vs 49.7%; no significant difference was found between the percentages of boys and girls from the three schools ($p > 0.05$). More than three-quarters (78.1%) of the children had no siblings or one sibling, while the rest had two or more siblings. There was no significant difference in the number of the children's siblings between the three schools ($p > 0.05$).

The fathers of half of the children were farmers (50.3%), and the remainders were government employees (22.7%) and self-employed (27.0%). While no significant differences were found in fathers' occupations in the full intervention school with either the partial intervention school or the control school, there was a significant difference in fathers' occupations between the

control and the partial intervention schools ($p < 0.05$): more fathers associated with the control school were farmers, while fewer were self-employed. The mothers of approximately two-thirds of the children (65.6%) were farmers, with nearly one-fifth (19.3%) self-employed, and the remainder government employees. Three-quarters of the children in the control school reported that their mothers were farmers (74.9%), while the partial intervention school had the highest number of mothers who were government employees among the three schools ($p < 0.001$).

Children in Grade 3 who participated in the study had a mean age of 8.10 ± 0.017; those in Grade 4 had a mean age of 9.09 ± 0.015; and those in Grade 5 had a mean age of 10.05 ± 0.016. There was no significant difference in the ages of children between the three schools ($p > 0.05$).

Table 4.3 Demographic characteristics of children in the three selected schools, and their parents' occupations (recorded pre-intervention, August, 2011)

	Full-intervention School (*N* = 397)	**Partial intervention School (*N* = 484)**	**Control school (*N* = 407)**	**Total (*N* = 1,288)**	***p* value**
	n (%)	*n* (%)	*n* (%)	*n* (%)	
Grade					
3	114 (28.7)$_a$	150 (31.0)$_a$	124 (30.5)$_a$	388 (30.1)	
4	141 (35.5)$_a$	159 (32.9)$_a$	129 (31.7)$_a$	429 (33.3)	>0.05*
5	142 (35.8)$_a$	175 (36.1)$_a$	154 (37.8)$_a$	471 (36.6)	
Gender					
Boy	201 (50.6)$_a$	234 (48.3)$_a$	213 (52.3)$_a$	648 (50.3)	>0.05*
Girl	196 (49.4)$_a$	250 (51.7)$_a$	194 (47.7)$_a$	640 (49.7)	
Number of sibling(s)					
None or one	320 (80.6)$_a$	397 (78.3)$_a$	307 (75.4)$_a$	1006 (78.1)	>0.05*
Two or more	77 (19.4)$_a$	105 (21.7)$_a$	100 (24.6)$_a$	282 (21.9)	
Father's occupation					
Farmer	203 (51.1)$_{a,b}$	222 (45.9)$_b$	223 (54.8)$_a$	648 (50.3)	
Government employee	92 (23.2)$_a$	107 (22.1)$_a$	93 (22.9)$_a$	292 (22.7)	<0.05*
Self-employed	102 (25.7)$_{a,b}$	155 (32.0)$_b$	91 (22.3)$_a$	348 (27.0)	
Mother's occupation					
Farmer	244 (61.5)$_a$	296 (61.2)$_a$	305 (74.9)$_b$	845 (65.6)	
Government employee	60 (15.1)$_{a,b}$	95 (19.6)$_b$	40 (9.8)$_a$	195 (15.1)	<0.001*
Self-employed	93 (23.4)$_a$	93 (19.2)$_{a,b}$	62 (15.3)$_b$	248 (19.3)	
Age	**Mean ± SE**	**Mean ± SE**	**Mean ± SE**	**Mean ± SE**	***p* value**
Grade 3	8.07 ± 0.027	8.11 ± 0.032	8.10 ± 0.028	8.10 ± 0.017	>0.05$^{\#}$
Grade 4	9.04 ± 0.024	9.13 ± 0.028	9.06 ± 0.021	9.09 ± 0.015	>0.05$^{\#}$
Grade 5	10.06 ± 0.021	10.05 ± 0.036	10.04 ± 0.016	10.05 ± 0.016	>0.05$^{\#}$

** chi-square test*

$_{a,b}$ Cells in a row in different columns with different subscript letters show a significant difference with p value < 0.05 and with same subscript letters show no significant difference with p value > 0.05 (chi-square test to compare proportions)

$^{\#}$ one-way ANOVA test

4.4 Children living with smoker(s) at home

Data from focus group discussions (FGDs) and in-depth interviews (IDIs) showed that smoking was very common in the three communes of the Chuong My district where the selected primary schools are located. Estimates of the proportion of smoking by different study subjects ranged from 60% to 70% among male adults in all three communes. Cigarettes and water-pipes were the two main means of smoking. Teachers estimated that approximately four-fifths of their pupils' fathers smoke, resulting in a very high exposure to SHS among the non-smoking population, including children. It was common for many parents (mainly fathers) to smoke in the home, and this was considered similar to the situation in every other rural region in Vietnam, according to fathers of primary school children in all three schools.

I think the smoking here is about 60–65% among men. (IDI with father who smoked, control school)

Here? About 70% [70% of men smoke]. (IDI with father who smoked, partial intervention school)

Primary school children in all three schools also confirmed the common occurrence of smoking. The quantitative data showed that the majority of the recruited children lived with smoker(s) in their households (Figure 4.1).

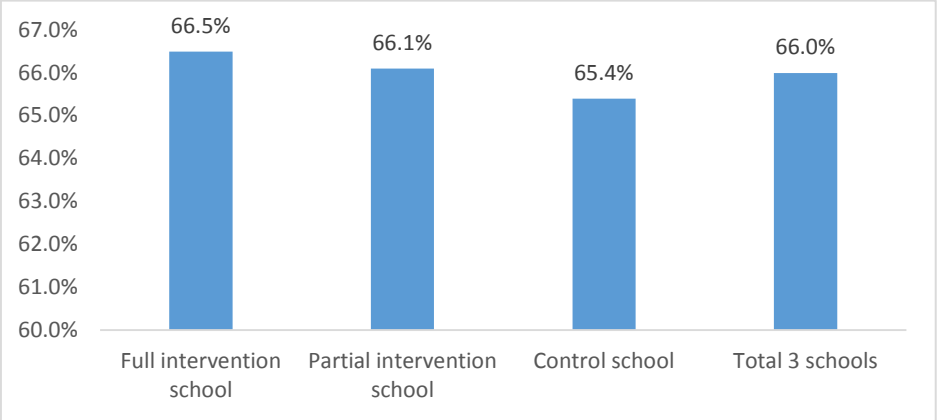


Figure 4.1 Percentage of children living with smokers in their households, by school, pre-intervention

As shown in Figure 4.1, among a total of 1,288 participating children, about two-thirds (850 children or 66.0%) reported to live with smoker(s). The percentage of the children living with smoker(s) in all three schools ranged from 65.4% in the control school to 66.5% in the full intervention school. However, there was no significant difference between these pre-intervention percentages for the three schools ($p > 0.05$).

The relationship of smoker(s) to children participating in the study is presented in Table 4.4. Among the 850 children who lived with smokers, 81.2% reported living with fathers who smoke (80.7%, 81.6% and 81.2% in the full intervention, the partial intervention and the control schools respectively) ($p > 0.05$). None of the children reported mothers, aunts or sisters as smokers[5], although a total of 0.9% reported that their grandmothers smoke (1.1%, 0.3% and 1.5% respectively in the full intervention, the partial intervention and the control schools) ($p > 0.05$). A total of 14.8% children lived with grandfathers who smoke (19.3%, 11.6% and 14.3% respectively in the full intervention, the partial intervention and the control schools), with the highest proportion belonged to the full intervention school ($p < 0.05$). The overall percentage of children living with uncles who smoke was 18.9% (20.5%, 19.1% and 17.3% respectively in the full intervention, partial intervention and control schools) ($p > 0.05$). A total of 6.4% children reported to live with brothers who smoke (5.3%, 7.8% and 5.6% respectively in the full intervention, partial intervention and control schools) ($p > 0.05$).

Table 4.4 Relationship of smoker(s) to children participating in the study (pre-intervention)

Smokers	**Full intervention school N=264**	**Partial intervention school N=320**	**Control school N=266**	**Total of three schools N=850**	***p* value***
	n (%)	*n (%)*	*n (%)*	*n (%)*	
Father	213 (80.7)	261 (81.6)	216 (81.2)	690 (81.2)	>0.05
Grandfather	51 (19.3)	37 (11.6)	38 (14.3)	126 (14.8)	<0.05
Grandmother	3 (1.1)	1 (0.3)	4 (1.5)	8 (0.9)	>0.05
Uncle	54 (20.5)	61 (19.1)	46 (17.3)	161 (18.9)	>0.05
Brother	14 (5.3)	25 (7.8)	15 (5.6)	54 (6.4)	>0.05

** chi-square test*

Figure 4.2 illustrates the percentage of children living with one or more smokers. Among children who lived with smoker(s), the majority (52.8%) lived with one smoker, while some (13.2%) lived with two smokers or more. No significant difference was observed between the schools in the number of smokers in the children's families ($p > 0.05$).

[5] None of the children in the three selected schools lived with mothers who smoke; therefore, the study will use the term 'fathers who smoke' instead of 'parents who smoke'.

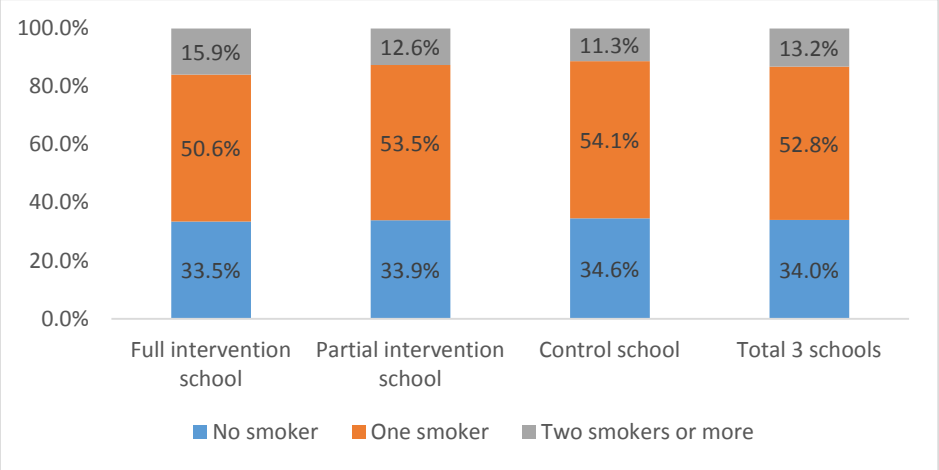


Figure 4.2 Number of smoker(s) living in the same houses with children, by school, pre-intervention

The results from the quantitative survey were supported by many responses from participants in the qualitative survey, where the majority of children admitted that they lived with fathers who smoke, and some said that they lived with both fathers and grandfathers or uncles who smoke. This was confirmed by teachers and the children's parents.

> *In my family, my father smokes, my grandfather smokes, and my uncle smokes. But my uncle works in Hanoi (in the city) and only comes back home on the weekend.* (FGD with primary school children, Grade 5, control school).

> *Both my husband and my father in-law smoke [father in-law lived with the family]. I have talked to them, but they have too many reasons. They smoke to relax, they smoke to relieve stress.* (FGD with mothers, full intervention school).

In addition, many adults who participated in the study perceived that smoking is accepted by society, and is a tradition. Apart from the reasons already given above, having free time, being self-employed, or just imitating others who smoke were among the many reasons offered to explain the common occurrence of smoking among the adult men in the locality. Working with a group of men who smoke was also considered a reason why nonsmoking men would decide to become smokers. This reason was cited by men in the FGDs and IDIs in the study.

> *In fact it [smoking] is a habit, and I consider it is not bad. It has existed for years, and becomes a habit, becomes a custom. For example, when visiting someone's house, we are often invited to smoke, and the same happens at funerals and weddings. Therefore, our ancestors had said 'Smoking is the opening of a story'.* (FGD with fathers who smoked outdoors on their children's request, full intervention school).

Many of my colleagues are smokers and I am too. Sometimes we have free time and we join together for a beer, then we smoke. And you can see, a lot of men in this commune don't go to work at the factories, they just stay home to work for their own. These men also smoke a lot (IDI with father who smoked, control school).

4.5 Children exposed to SHS at home

The situation of children exposed to SHS at home in the three selected schools was measured by the percentage of fathers and other smokers who smoke in the home and the percentage of children who reported exposure to SHS at home pre- and post-intervention, as shown in Figures 4.3 and 4.5. These percentages were measured only among 850 children who lived with smoker(s).

4.5.1 Fathers or other smokers who smoke in the home

The proportion of children living with people who smoke in the home is shown in Figure 4.3. Overall, pre-intervention, 78.5% reported that their fathers/other smokers frequently smoke in the home, with this percentage post-intervention being 69.6% and this change was not significant ($\chi^2 = 2.863$, $df = 2$, $p = 0.239$). Pre-intervention, the percentages of children's fathers/other smokers smoking in the home were not significantly different in the three schools ($p > 0.05$). The decrease in the proportion of fathers/other smokers smoking in the home post-intervention in the full intervention school was significant (59.8% vs 83.0%; $\chi^2 = 34.512$, $df = 1$, $p < 0.001$). In the partial intervention school, fathers' and others' smoking in the home decreased from 77.5% pre-intervention to 72.5% post-intervention, but this difference was insignificant ($\chi^2 = 2.133$, $df = 1$, $p = 0.144$). In the control school, the percentage of fathers and others smoking post-intervention (75.9%) was unchanged from pre-intervention (75.2%) ($\chi^2 = 0.041$, $df = 1$, $p = 0.840$). Post-intervention, the proportion of fathers and others smoking in the home in the full intervention school was significantly lower than that in the partial intervention and the control school ($p < 0.05$); while no significant difference was found between the partial intervention and the control schools ($p > 0.05$).

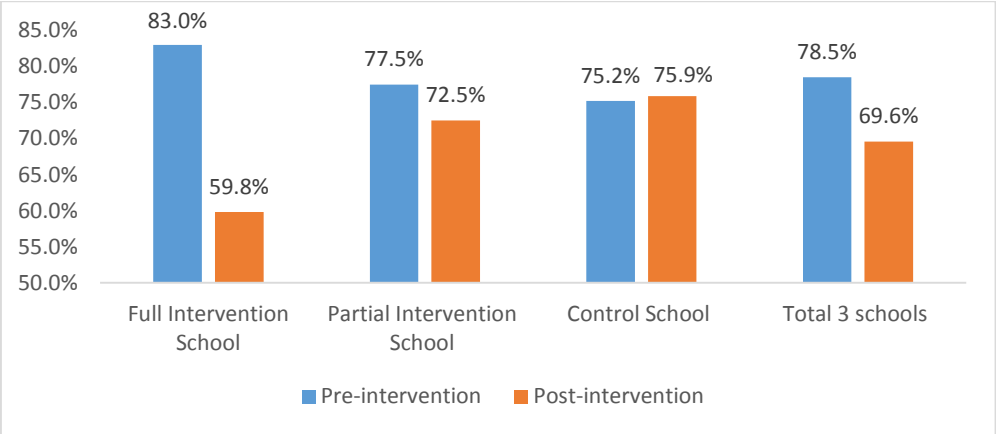


Figure 4.3 The percentage of fathers of children or other smokers who smoked in the home pre- and post-intervention

The possible explanation for the reduction of smoking in the home in the full intervention school can be found in the supporting qualitative data, which imply the success of children in persuading their fathers/other smokers to smoke outdoors. In the various FGDs conducted with different participants, such as fathers who smoke, and primary school children in the full intervention school, it became apparent that many of the fathers chose to smoke outdoors during the intervention program, either voluntarily or through the persuasion of their children, and sometimes with the encouragement of their wives in support of the children.

> *Whenever my father smoked, I said to him that I felt breathless. Then he went out to smoke*. (FGD with primary school children, Grade 4 and 5, full intervention school)

> *When I smoked, he [son] reminded me not to smoke in the home and I came outside to smoke. And I always think that it would be much better if I could quit smoking*. (FGD with fathers who smoked outdoors on their children's request, full intervention school)

Another factor in children's success in convincing their fathers and other smokers was their frequent reminders, which were shown to be an effective way to make fathers go out of the house to smoke.

> *My daughter, she reminded her father frequently [not to smoke in the home]. In the past she also told him about that, but this year she told him many times. Whenever my husband smoked, she reminded him to go outside*. (FGD with mothers, full intervention school).

The FGDs with teachers and the children's mothers also indicated that, during the intervention, more fathers and other adult smokers went outside to smoke at the request of children with the support of their mothers.

In my class, many of my students reported to me that their fathers had gone outside to smoke. One student even said to me that she was successful in helping her father quit smoking (FGD with teachers, full intervention school).

When she [daughter] came back from school, she also advised my husband not to smoke and not to smoke indoors. She is now only in Grade 3. However, her father said that he would only stop smoking when the Vietnamese Government closed all the tobacco companies. But then he went outside to smoke [laughed]. (FGD with mothers, full intervention school).

The qualitative data from fathers who smoke, and whose children were in the partial intervention and control schools, indicated that these groups held similar views to the fathers in the full intervention, and also showed their support for a better air environment at home for their children.

Fathers who smoke and who agreed to participate in the IDIs at the partial intervention and the control schools admitted that their smoking could have adverse effects on their children's health, and they tried their best to limit these health impacts. Fathers thought that trying to smoke outdoors was a solution to protecting health of their children. One said that he never smoked in the home when his children were around because he considered SHS was harmful for his children. Fathers also reminded their children to leave when they smoked in the home. However, forgetting to remind children to stay away from SHS also seemed to be a frequent occurrence, and these fathers estimated that they forgot to tell their children to go away from their SHS approximately 50% of the times they smoked in the home. Watching television in the evening appeared to be the major activity that resulted in fathers forgetting to remind their children to avoid SHS. Children were also reluctant to miss favourite television programs to avoid SHS.

About 50/50 [ratio of remembering/forgetting to remind children to go away from SHS when father smoked]. Sometimes he was so focused on watching television and he didn't leave. And I myself also focused on that then forgot to ask him to leave. (IDI with father who smoked, control school).

I smoke around one and a half pack of cigarette per day [30 cigarette per day]. Sometimes I remember to remind them [children] to go away, sometimes I forget. How can I remember and remind them to leave each time I smoke? (IDI with father who smoked, partial intervention school).

Comparisons of the proportion of children living with in-home smokers and other characteristics

The study compared the differences (if any) in the proportion of children living with adults who frequently smoke in the home with other characteristics of the children, such as grade, gender, number of siblings, parents' occupations, and number of smoker(s) in the family. Except for grade, no significant differences were found among children living with in-home smokers with respect to

their gender, number of siblings, father's and mother's occupations, and number of smokers in the family.

The percentage of children living with fathers or other adults who smoke in the home was compared by grade pre- and post-intervention; the results are presented in Figure 4.4. Chi-square tests were performed to determine any differences between the grades of the children and where their fathers or other smokers smoked (indoors vs outdoors) before and after the intervention. No significant differences were found, except in the control school post-intervention, where a higher percentage of children in Grade 3 compared to the other grades were living with fathers/other smokers who smoke in the home ($p < 0.05$).

In relation to the time of the intervention, as shown in Figure 4.4, there were significant reductions in the number of children whose fathers/other smokers smoke in the home in all grades in the full intervention school following the intervention (Grade 3 $\chi^2 = 19.970$, $df = 1$, $p < 0.001$; Grade 4 $\chi^2 = 9.841$, $df = 1$, $p = 0.002$); Grade 5 $\chi^2 = 7.216$, $df = 1$, $p = 0.007$). There were no significant reductions in the number of children whose fathers/other smokers smoke in the home at the partial intervention school, except for children in Grade 5 ($\chi^2 = 7.661$, $df = 1$, $p = 0.006$). A reverse trend was observed in the control school, with increased numbers of children in Grade 3 the number of children whose fathers/other smokers smoke in the home ($\chi^2 = 6.103$, $df = 1$, $p = 0.013$).

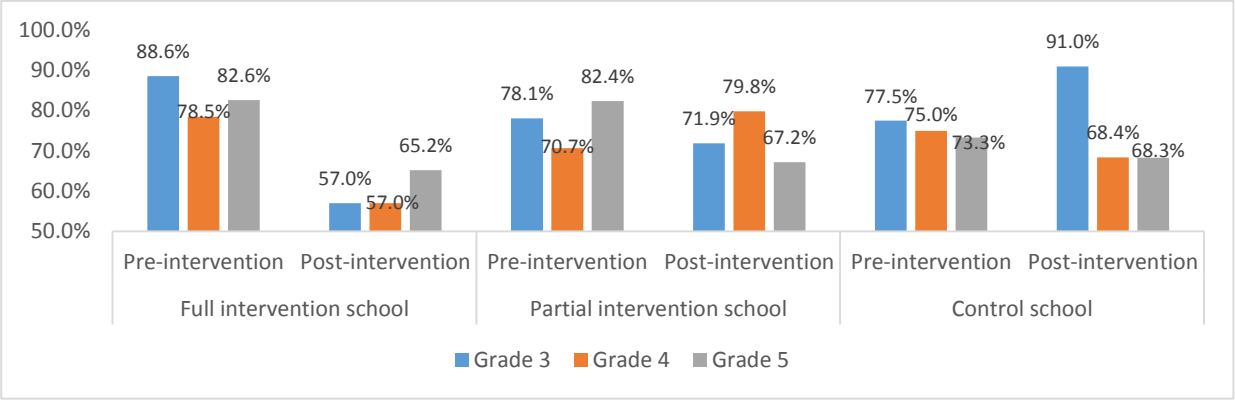


Figure 4.4 Proportion of children whose fathers and adult smokers smoked in the home, by grade and by school, pre- and post-intervention

4.5.2 Children's exposure to SHS at home

Figure 4.5 shows the percentage of children who reported their exposure to SHS at home both the pre-intervention survey and the post-intervention survey. This percentage was calculated only for children living with smoker(s). Among 850 children living with smoker(s) in this current study, 79.4% of them (675 children) reported their exposure to SHS at home pre-intervention, with

the percentage post-intervention being 71.6% (609 children) (χ^2 =37.473, *df* = 2, $p < 0.001$). This made an overall percentage of 52.4% of children reporting exposure to SHS at home pre-intervention and 47.3% post-intervention (from the total of 1,288 children recruited to the study).

Pre-intervention, the percentage of children in the partial intervention school exposed to SHS was significantly lower compared to that of the other two schools ($p < 0.05$), while there was no significant difference in the percentage of children exposed to SHS in the full intervention and the control schools ($p > 0.05$).

Post-intervention compared to pre-intervention, there was a significant reduction in the proportion of children reported to be exposed to SHS in the full intervention school (59.9% vs 86.4%) (χ^2 = 47.201, *df* = 1, $p < 0.001$). There was a minor, insignificant decrease post-intervention in the proportion of children exposed to SHS in the partial intervention school (69.4% vs 70.3%) (χ^2 = 0.067, *df* = 1, p = 0.796), while there was a slight, insignificant increase in the percentage of exposed children in the control school post-intervention (86.1% vs 83.5%) (χ^2 = 0.714, *df* = 1, p = 0.398). Comparing the proportion of children reported to be exposed to SHS post-intervention among the three schools, that in the full intervention school was lowest (59.8%), followed by the partial intervention school (69.4%) then by the control school (86.1%) ($p < 0.05$).

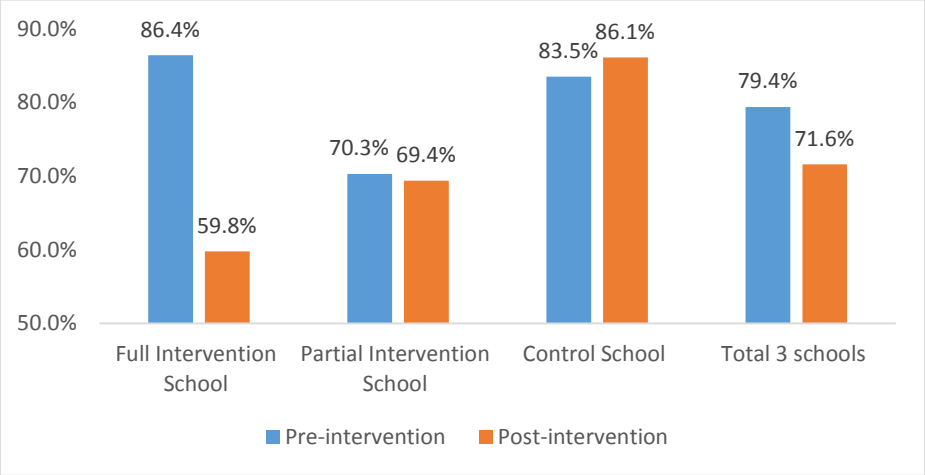


Figure 4.5 The percentage of children reporting exposure to SHS, pre- and post-intervention

The impressive post-intervention results for the full intervention school were complemented by data from the qualitative survey showing that children in this school had either tried to persuade their fathers/other adults not to smoke in the home, or had moved away from smokers to avoid SHS.

> *I learnt at school, and when I was back home I talked to my father [about SHS]. When my father asked me [questions related to SHS], I could answer him. And he agreed with me and went outside to smoke.* (FGD with children in Grade 4 and 5, full intervention school).

I talked to my granddad, but he answered 'That's stupid. Smokers are not affected; why are non-smokers affected?' Then I didn't talk to him about that. I left each time I saw him smoking. (FGD with children in Grade 4 and 5, full intervention school).

In addition, the occurrence of children's exposure to SHS in their home environment was reconfirmed by the qualitative data, as admitted by the majority of the recruited informants. During the FGDs, children, especially those in the partial intervention and the control schools, confirmed their exposure to SHS at home as a result of their fathers, grandfathers, uncles and guests/visitors smoking. In most of the FGDs and IDIs held with children, parents and teachers, the living room was nominated as the place in which most in-home smoking occurred.

As I mentioned, they [fathers of children] often smoke in the living room. In a rural area like this, there is no separate room for children; therefore, when they [fathers] smoke, people around them, including children, will be affected. Therefore the chance of being exposed to SHS among children is very high. (FGD with teachers, full intervention school).

As I observed, passive smoking is quite common here, because some smokers are quite conservative. Even when they are told about the harmful effects of SHS, they still don't care. Therefore, their children become passive smokers. (FGD with teachers, full intervention school).

When my father has a guest [and they smoke], I often sit on the bed next to them to watch TV and they smoke when children [like myself] are around them. (FGD, primary school children in Grade 4, partial intervention school).

Children in the partial intervention and the control schools also mentioned ineffective 'methods' to avoid exposure to SHS at home, such as closing their nostrils with their fingers, waving the SHS away with their hands, or trying to breathe through the mouth instead of the nose. Fathers forgetting to remind children go away and children watching favourite programs on television seemed to be the main things that made these children reluctant to avoid SHS. In Section 4.5.1, it was reported that fathers of children from these two schools confirmed that they frequently forgot to remind their children to leave to avoid their SHS. These together could result in the non-change of children's self-reported exposure to SHS at home at both the partial intervention and the control schools post-intervention.

Miss, if many people were sitting there to smoke, I went to other places. But if there were only my family members, I could stay there and wave my hand to expel the smoke away from my nose. Or I could close my nose with my fingers. (FGD, children in Grade 4, partial intervention school).

I tried not to breathe by my nose. I breathed by my mouth so that I didn't smell the tobacco smoke…I was still there because there was a film on TV. (FGD, children in Grade 3, control school).

Comparisons of the prevalence of children's exposure to SHS and their demographic characteristics/their parents' occupations

The study also investigated any associations between children's self-reported exposure to SHS at home and other characteristics of the children, including grade, gender, number of siblings, father's occupation, mother's occupation and number of smoker(s) in the family. Similarly to the results above in Section 4.5.1, except for grade, no significant differences were discovered in relation to gender, number of siblings, father's and mother's occupations, and number of smoker(s) that children lived with.

There were significant differences in the percentage of children's exposure to SHS by grade both pre- and post-intervention (see Figure 4.6). Pre-intervention, in the full intervention school, the proportion of children in Grade 3 exposed to SHS at home was higher than in Grade 5 ($p < 0.05$), while no significant difference was found between children in Grade 3 and Grade 4, and children in Grade 4 and Grade 5 ($p > 0.05$). In the control school, the percentage of children in Grade 5 exposed to SHS was lower than that of children in Grade 3 and in Grade 4 ($p < 0.05$). There was no significant difference with respect to grade in the partial intervention school.

Post-intervention, no significant differences were observed between the three grades with respect to children's exposure to SHS at home in the full intervention and the partial intervention schools ($p > 0.05$). In the control school, the results were similar to the pre-intervention results, with a lower percentage of children in Grade 5 exposed to SHS at home compared to children in Grade 3 and Grade 4 ($p < 0.05$).

In relation to the change between the prevalence of children's self-reported exposure to SHS at home pre- and post-intervention surveys in each grade, the results (Figure 4.6) showed that the reductions in prevalence in Grade 3 ($\chi^2 = 16.458$, $df = 1$, $p < 0.001$), Grade 4 ($\chi^2 = 29.535$, $df = 1$, $p < 0.001$) and Grade 5 ($\chi^2 = 6.571$, $df = 1$, $p = 0.01$) in the full intervention school were significant. The differences between pre- and post-intervention prevalence in Grades 3, 4 and 5 of the partial intervention and control schools were not significant ($p > 0.05$).

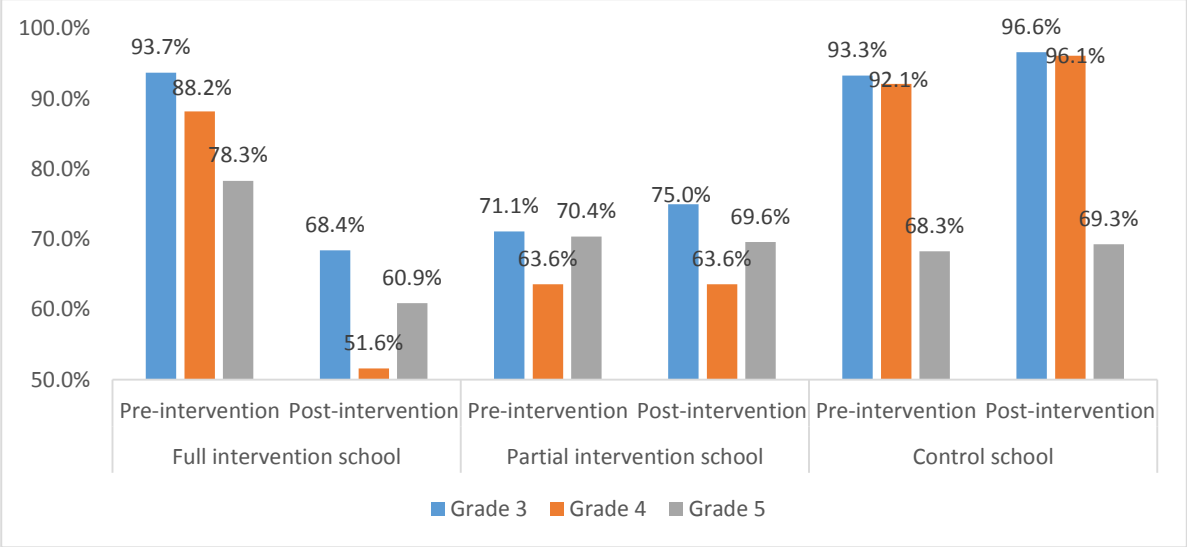


Figure 4.6 Percentage of children's self-reported exposure to SHS at home by grade and by school, pre- and post-intervention

4.6 Children's knowledge, attitudes and practices (KAP) mean score

This section presents, by mean score, the children's knowledge, attitudes and practices (KAP) on the harmful effects of SHS on their health, as detailed in Chapter 3 (Section 3.4.11).

4.6.1 Mean scores of children's knowledge

The mean scores and standard deviations (*SD*s) comparing children's knowledge on the harmful effects of SHS on children's health are presented in Table 4.5.

Table 4.5 Mean scores and standard deviations comparing children's knowledge of the harmful effects of SHS on children's health, pre- and post-intervention

School / **Time of intervention**	**Full intervention school (*N* = 397)**		**Partlial intervention school (*N* = 484)**		**Control school (*N* = 407)**		***F*; *p* value[#]**
	Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***	
Pre-intervention (T_0)	2.08	1.27	2.50	1.38	1.94	1.05	$F = 24.460$; $p < 0.001$
Post-intervention (T_1)	6.06	1.73	3.56	2.00	3.25	2.29	$F = 236.954$; $p < 0.001$
Change between pre- and post-intervention ($T_1 - T_0$)	3.98	2.20	1.06	2.45	1.31	2.48	$F = 203.398$; $p < 0.001$
t*; *p* value	$t = 36.001$; $p < 0.001$		$t = 9.514$; $p < 0.001$		$t = 10.617$; $p < 0.001$		

[#] *one-way ANOVA test*

* *paired-samples t-test*

As Table 4.5 shows, the mean pre-intervention scores for children's knowledge in all three schools were low. There was a significant difference in mean score of the children's knowledge

between schools (F = 24.460, p < 0.001), with the highest mean score exhibited by the children in the partial intervention school (2.50 ± 1.38), and no significant difference in mean scores between children in the full intervention and the control schools (post hoc tests LSD).

Post-intervention, an increase in the knowledge mean score was observed in all three schools, with the highest mean score obtained by children in the full intervention school (6.06 ± 1.73); however, there was no significant difference in the knowledge mean scores of children in the partial intervention and the control schools (F = 236.954, p < 0.001, post hoc tests LSD).

Comparing changes in the mean score of children's knowledge in each school (post- vs pre-intervention) shows that there was a significant increase in all three schools: in the full intervention school, an increase of 3.98 ± 2.20 (t = 36.001; p < 0.001); in the partial intervention school 1.06 ± 2.45 (t = 9.514; p < 0.001); and in the control school 1.31 ± 2.48 (t = 10.617; p < 0.001). A comparison between the three schools using one-way ANOVA tests and post hoc tests LSD found that the changes in mean score of children's knowledge in the full intervention school (3.98) was significantly higher than the changes in the partial intervention school (1.06) and in the control school (1.31) (F = 203.398, p < 0.001). There were non-significant differences in the changes in knowledge score between the latter two schools.

4.6.2 Mean scores of children's attitudes

Table 4.6 presents the mean pre- and post-intervention scores and *SD*s for the children's attitudes to avoiding SHS. Pre-intervention, the children in the three schools had similar mean scores for attitudes, and there were no significant differences between the mean scores in the three schools (F = 0.494, p = 0.610).

Table 4.6 Mean scores and standard deviations comparing children's attitudes to avoiding exposure to SHS, pre- and post-intervention

School / **Time of intervention**	**Full intervention school (*N* = 397)**		**Partial intervention school (*N* = 484)**		**Control school (*N* = 407)**		***F*; *p* value[#]**
	Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***	
Pre-intervention (T_0)	5.38	2.13	5.29	2.07	5.23	1.94	F = 0.494; p = 0.610
Post-intervention (T_1)	7.28	1.38	6.22	1.56	5.97	1.66	F = 82.744; p < 0.001
Change between pre- and post-intervention ($T_1 - T_0$)	1.90	2.32	0.93	2.46	0.74	2.39	F = 27.585; p < 0.001
***t*; *p* value ***	t = 16.349; p < 0.001		t = 8.393; p < 0.001		t = 6.619; p < 0.001		

[#] *one-way ANOVA test*

** paired-samples t-test*

Post-intervention, similar to the children's knowledge mean scores, increased attitude mean scores were found in all three schools. The highest mean score was in the full intervention school (7.28 ± 1.38), followed by the partial intervention school (6.22 ± 1.56) and lastly by the control school (5.97 ± 1.66). These differences were significant ($F = 82.744$; $p < 0.001$). A comparison of post- and pre-intervention mean scores of children's attitudes in each school shows that children in all schools had significantly increased attitude mean scores post-intervention. The mean score for the full intervention school increased by 1.90 ± 2.32 ($t = 16.349$; $p < 0.001$); for the partial intervention school by 0.93 ± 2.46 ($t = 8.393$; $p < 0.001$); and for the control school by 0.74 ±2.39 ($t = 6.619$; $p < 0.001$). These changes in the three schools were significant ($F = 27.585$; $p < 0.001$), with the highest increase in the mean score of attitudes at the full intervention school, and non-significant differences between the mean scores of the other two schools (post hoc tests LSD).

4.6.3 Mean scores of children's practices

Table 4.7 shows the mean scores and *SD*s for children's practices on avoiding SHS. There were significant differences between the pre-intervention mean scores of children in the three schools ($F = 13.339$; $p < 0.001$). Applying post hoc tests LSD, it was found that children in the control school had a lower practice mean score compared to the full and the partial intervention schools; there was no significant difference between the practice mean scores of the latter two schools.

Table 4.7 Mean scores and standard deviations comparing children's practices to avoiding exposure to SHS, pre- and post-intervention

School / **Time of intervention**	**Full intervention school (N = 264)**		**Partial intervention school (N = 320)**		**Control school (N = 266)**		***F*; *p* value[#]**
	Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***	
Pre-intervention (T_0)	2.86	1.39	2.73	1.36	2.29	1.25	$F = 13.399$; $p < 0.001$
Post-intervention (T_1)	4.47	0.63	3.03	1.28	2.86	1.20	$F = 176.926$; $p < 0.001$
Change between pre- and post-intervention ($T_1 - T_0$)	1.61	1.54	0.31	1.31	0.57	1.22	$F = 70.407$; $p < 0.001$
***t*; *p* value ***	$t = 16.858$; $p < 0.001$		$t = 4.237$; $p < 0.001$		$t = 7.613$; $p < 0.001$		

[#] *one-way ANOVA test*

** paired-samples t-test*

Post-intervention, the practice mean scores increased in all three schools, with the highest mean score at the full intervention school (4.47 ± 0.63); there were no significant differences in mean scores between the partial intervention and the control schools ($F = 176.926$; $p < 0.001$ and post hoc tests LSD). When the post- and pre-intervention practice mean scores for each school were compared using the paired-samples t-test, it was found that there were significant increases in the

mean scores in each school: the increase in the full intervention school was 1.61 ± 1.54 (t = 16.858; p <0.001); in the partial intervention school 0.31± 1.31 (t = 4.237; p < 0.001); and in the control school 0.57 ± 1.22 (t = 7.613; p < 0.001). One-way ANOVA tests in combination with post hoc tests LSD were used to test for any variance in the comparative practice mean scores between pre- and post-intervention. The highest increase in mean scores was in the full intervention school, followed by the control school and lastly by the partial intervention school (F = 70.407; p < 0.001).

4.7 Children's KAP categorised by level

Knowledge, attitudes and practices of children in the three schools were categorised by level (poor, fair, good) on the basis of the scores they achieved for the questionnaire (see Section 3.4.11, Chapter 3 Methodology). Chi-square tests were used to analyse the variations between each KAP level pre- and post-intervention in each school, and between the three schools for each KAP level.

4.7.1 Children's knowledge of the harmful effects of SHS

As detailed in Chapter 3 (Section 3.4.11), the children's knowledge scores were divided into three different levels: poor (a knowledge score from 0 to 2); fair (a knowledge scored from 3 to 4); and good (a knowledge score from 5 to 9). The changes in the children's knowledge levels from pre- to post-intervention are shown in Figure 4.7.

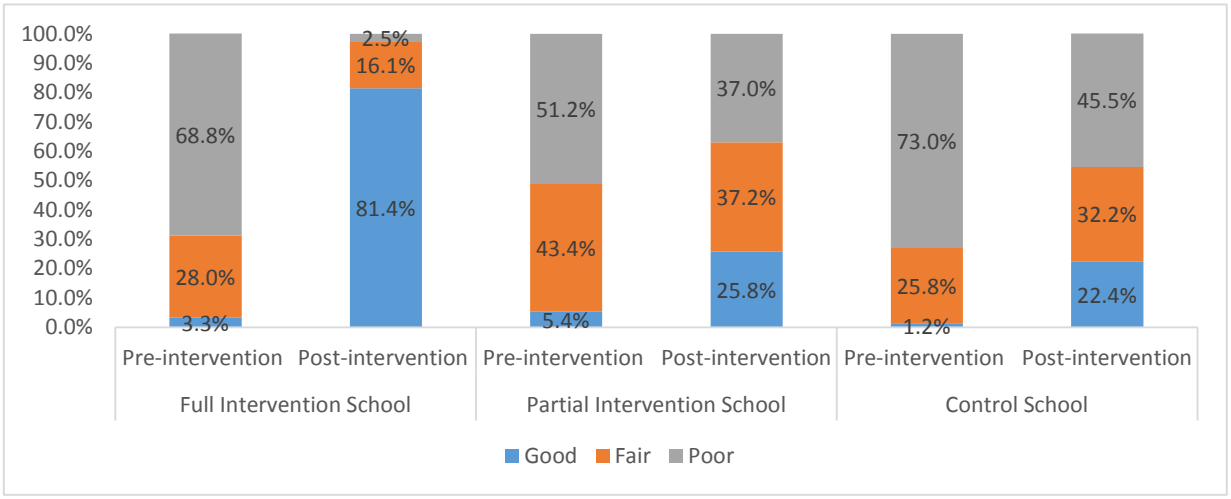


Figure 4.7 Knowledge levels of children in the three selected schools, pre- and post-intervention

Pre-intervention, there was no significant difference between the full intervention school and the control school for all three levels of knowledge (p > 0.05). However, at the partial intervention

school, a significantly higher proportion of children had a ‘fair’ level of knowledge, and a significantly lower proportion had a ‘poor’ level of knowledge compared to the other two schools ($\chi^2 = 55.305$, $df = 4$, $p < 0.001$).

Post-intervention, an increase was observed in the ‘good’ level in all three schools ($\chi^2 = 394.368$, $df = 4$, $p < 0.001$), with a significant increase, and the highest increase in the full intervention school (81.4%) ($p < 0.05$). The changes in the levels at the partial intervention and the control schools were not significant ($p > 0.05$). Approximately a quarter of the children in each of the latter two schools reached the ‘good’ knowledge level.

In contrast to the ‘good’ knowledge level, a drop in the proportion of children with a ‘poor’ knowledge level was witnessed in all three schools ($p < 0.05$), with the largest drop at the full intervention school (2.5%). The proportions of children at the full intervention school with ‘poor’ and ‘fair’ knowledge levels post-intervention were significantly lower than those at the partial intervention and the control schools ($p < 0.05$).

The improvement of children’s knowledge about the harmful effects of SHS on their health was also indicated in the qualitative study. For the full intervention school, parents also recognised that their children’s knowledge about SHS had advanced.

> *My son, he said a lot. When he saw my husband smoking, he started to ask ‘Dad, do you know smoking is very dangerous to your health? Do you know tobacco smoke contains a lot of carcinogens? Do you know that it contains toxic chemicals that might cause death among infants?’ Blah… blah… (laughed).* (FGD with children’ mothers, full intervention school).

Study participants considered that the teaching content on the harmful effects of SHS in the standard primary school curriculum was not enough for children to understand thoroughly the harmful effects of SHS on their health. These participants also perceived that the limited information in the curriculum was not enough to help children maintain their practices in avoiding SHS and in persuading smokers not to smoke in the home or in children’s vicinity.

> *If children are taught only one action of identifying that the image they saw in the pictures was ‘right’ or ‘wrong’ [for the health of the respiratory system] in a lesson in Grade 3 in the subject Nature and Society, and in another lesson ‘Say No to Stimulants’ in Grade 5 in the subject Science, I think that they could not understand thoroughly the huge and catastrophic health effects of tobacco smoke, because when teachers teach that issue, it is taught in one class hour only. Children, though, might realise that they should stay away from tobacco smoke, but don’t understand why they should do that. And because they don’t understand, they can’t maintain their optimal prevention of exposure to it [SHS]. If we just stop at the content available in the official curriculum of the primary education program, it is insufficient for children to thoroughly understand and ‘feel’ the harmful effects of it*

[SHS], and of course it is not enough for them to understand it [SHS] comprehensively and to communicate it to their families, to their parents and to their community. (Principal, full intervention school).

4.7.2 Children's attitudes to avoiding exposure to SHS

Children's attitude scores on avoiding exposure to SHS were divided into three different levels: poor (attitude scores from 0 to 3); fair (attitude scores from 4 to 6); and good (attitude scores from 7 to 9) (see Chapter 3, Section 3.4.11). The changes in children's attitude levels from pre-intervention to post-intervention are shown in Figure 4.8.

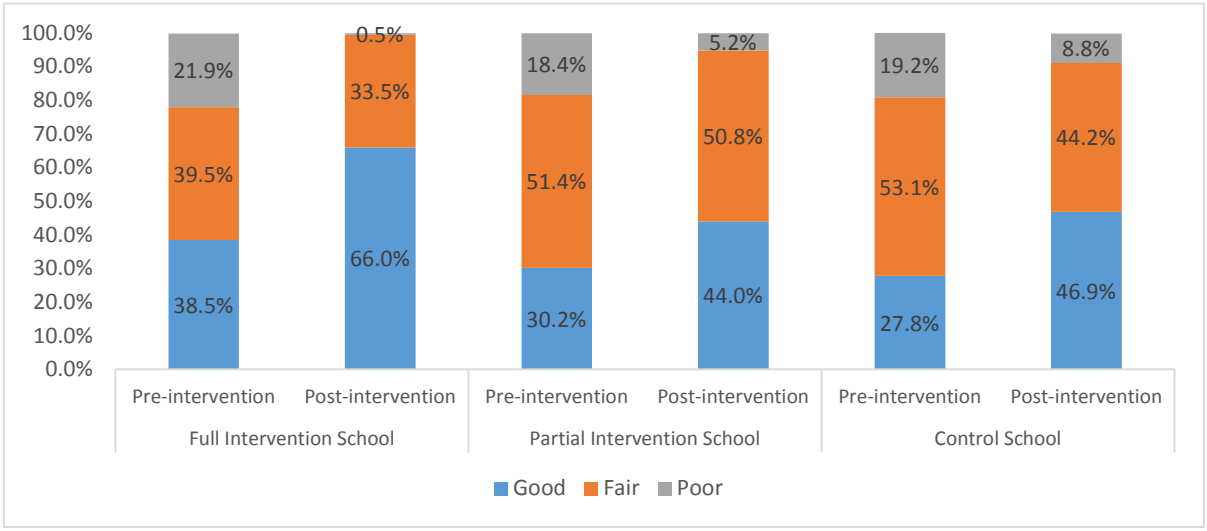


Figure 4.8 Attitude levels of children in the three selected schools, pre-and post-intervention

Pre-intervention, there were significant differences in children's attitude levels between the three schools ($\chi^2 = 18.777$, $df = 4$, $p = 0.001$). About one-third of children in the three schools had a 'good' attitude level, with proportions ranging from 27.8% in the control school, to 30.2% in the partial intervention school, and 38.5% in the full intervention school. The percentage at the full intervention school was significantly higher ($p < 0.05$), while there were no significant differences between the other two schools ($p > 0.05$). The percentage of children in the full intervention school with 'fair' attitude levels was significantly lower than in the partial intervention and the control schools (39.5% vs 51.4% and 53.1% respectively, $p < 0.05$), while there were no significant differences in the 'fair' level between the partial intervention and the control schools ($p > 0.05$). There were no significant differences in the 'poor' level between the three schools ($p > 0.05$).

Post-intervention, an increase in the percentage of 'good' attitudes was seen in all three schools ($\chi^2 = 88.532$, $df = 4$, $p < 0.001$). More children in the full intervention school had 'good' attitudes (66.0%, $p < 0.05$), while there was no significant difference between the partial

intervention (44.0%) and the control (46.9%) schools. The proportions of 'good' attitudes in all three schools were significantly higher than at pre-intervention ($\chi^2 = 111.795$, $df = 2$, $p < 0.001$ in the full intervention school; $\chi^2 = 48.452$, $df = 2$, $p < 0.001$ in the partial intervention school; and $\chi^2 = 18.558$, $df = 2$, $p < 0.001$ in the control school). Conversely to the 'good' attitude level, a significant decrease in the proportion of children with 'poor' attitudes was found post-intervention in the full intervention school ($p < 0.001$). Similar decreases were also observed in the partial intervention and the control schools post-intervention ($p < 0.001$). The proportions of children in the full intervention school with 'poor' and 'fair' attitudes post-intervention were significantly lower than in the partial intervention and the control schools ($p < 0.05$).

Qualitative data from FGDs with children in the three schools revealed that all children felt very annoyed or unhappy when they were exposed to SHS.

> *I felt annoyed when they [smokers] smoked in front of me, especially when I was holding my younger sister… Because it is not good for my health and my sister's health* (FGD with children in Grade 5, partial intervention school).

Qualitative data collected from children in the full intervention school through FGDs supported the quantitative data that children in this school had advanced in their attitudes to avoiding exposure to SHS. In contrast, children in the partial intervention and the control schools who participated in the FGDs showed their reluctance to persuade their fathers or other smokers in their family to smoke outdoors.

> *Because of this program [the intervention], I feel more confident to go back to discuss with my father and persuade him to go outside to smoke. I can talk to him about the health risks if I have to inhale tobacco smoke.* (FGD with children in Grade 3, full intervention school).

> *I am hesitant [about persuading smoking fathers to smoke outdoors]. For me, I think that going away to another place then coming back [when the smoking is finished] is OK.* (FGD with children in Grade 3, control school).

> *I think, if my father and my grandfather were smoking and I would go there to ask them to go out to smoke… I feel hesitant.* (FGD with children in Grade 5, control school).

> *I am not confident [in persuading smokers to smoke outdoors]. Because I sometimes tried to persuade him and he was angry with me.* (FGD with children in Grade 5, partial intervention school).

4.7.3 Children's practices in avoiding exposure to SHS

As detailed in Chapter 3 (Section 3.4.11), children's scores for practices were divided into three different levels: poor (practice scores from 0 to 2); fair (practice scores from 3 to 4); and good

(practice scores of 5). The changes in children's practice levels between pre- and post-intervention are shown in Figure 4.9.

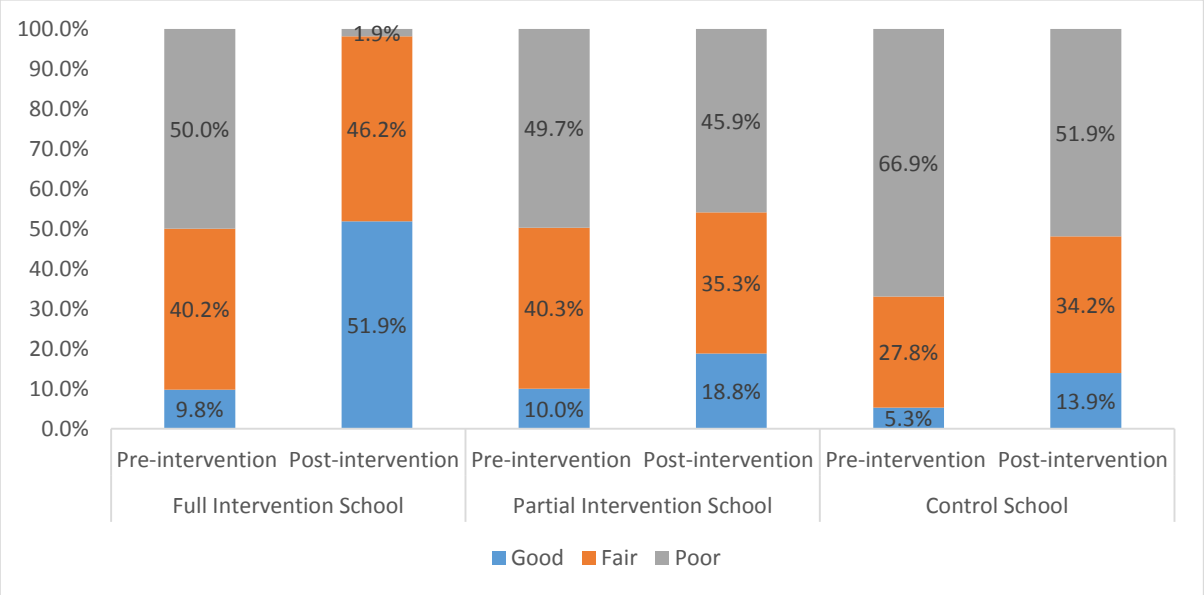


Figure 4.9 Practice levels of children in the three selected schools, pre-and post-intervention

There were significant differences in pre-intervention practice levels between children in the three schools (χ^2 = 22.137, *df* = 4, $p < 0.001$). The differences in the 'good' practice level of children between all three schools were insignificant ($p > 0.05$). There were no significant differences in any of the practice levels ('poor', 'fair' and 'good') between the full intervention and the partial intervention schools ($p > 0.05$), while a lower percentage of 'fair' and a higher proportion of 'poor' practice levels were seen in the control school compared to the other two schools ($p < 0.05$).

Post-intervention, a large increase in the 'good' practice level was observed in the children at the full intervention school (51.9% post- vs 9.8% pre-intervention, $\chi^2 = 194.442$, *df* = 2, $p < 0.001$), while smaller increases were also observed in the partial intervention school (18.8% post- vs 10.0% pre-intervention, $\chi^2 = 10.050$, *df* = 2, p = 0.007) and the control school (13.9% post- vs 5.3% pre-intervention, $\chi^2 = 17.187$, *df* = 2, $p < 0.001$). At the full intervention school, there was a drop in the percentage of children with 'poor' practice levels ($p < 0.05$), while the percentage of children with 'fair' practice levels remained unchanged ($p > 0.05$). The percentages of children who reported 'poor' and 'fair' practice levels in the partial intervention school were not significantly different between pre- and post-intervention ($p > 0.05$). Post-intervention, children in the full intervention school reported significantly higher 'good' ($p < 0.05$) and 'fair' ($p < 0.05$) practice levels and significantly lower 'poor' practice levels ($p < 0.005$) than their counterparts in the partial intervention and control schools (χ^2 =208.073, *df* = 4, $p < 0.001$). There were no significant

differences between the partial intervention and the control schools in the percentages of children at all three practice levels (poor, fair, good) ($p > 0.05$).

The improvement in practices among children in the full intervention school was also evidenced through various responses from the participants in FGDs, which showed an increased frequency of children explaining to fathers and other adults in the family the detrimental health effects of SHS or discussing not smoking in the home with them; this was not the case for the partial intervention and the control schools.

> *In the past, I always complained when my husband smoked, but it was ineffective. Recently, my son said to him that there was a program at the school [the intervention], and he frequently asked him [to go outside to smoke], and I saw it worked.* (FGD, mothers, full intervention school).

> *No, I haven't tried yet [to persuade father to go outside to smoke]. I stayed there sometimes; sometimes I left the tobacco smoke*. (FGD with children in Grade 3, control school).

> *I've never tried [to persuade father to go outside to smoke], because I am afraid he would get mad with me.* (FGD with children in Grade 5, partial intervention school).

4.8 Applying binary logistic regressions in validating children's exposure to SHS and their KAP on SHS

As presented in this chapter in Section 4.5.1 (Fathers or other smokers who smoke in the home), smoking indoors in the children's homes at the full intervention school was significantly reduced post-intervention. Similarly, Section 4.5.2 (Children's exposure to SHS at home) of this chapter also indicated a significant reduction in the numbers of children at the full intervention school who reported their exposure to SHS at home post-intervention. Sections 4.6 and 4.7 of this chapter reported a significant improvement in children's KAP on SHS at the conclusion of the intervention, with the greater improvement seen in the full intervention school.

This section discusses further validation of the effectiveness of the intervention program by using binary logistic regressions with the backward stepwise method to assess children's self-reported exposure to SHS, the smoking place of children's fathers and other adult smokers in the family, and children's KAP on SHS. Five dependent variables (children's exposure to SHS post- vs pre-intervention, fathers' or others' smoking places post- vs pre-intervention, change in children's knowledge post- vs pre-intervention, change in children's attitudes post- vs pre-

intervention, and change in children's practices post- vs pre-intervention) were used in the binary logistic models detailed above(Chapter 3, Section 3.4.13).

4.8.1 Children's self-reported exposure to SHS at home post- vs pre-intervention

This first model was run with children in all three schools (full intervention, partial intervention and control). All children who reported currently living with smokers (850) were included in the first model. A total of 11 independent variables (all categorical variables) were examined to identify if they were associated with the variable created in Section 3.4.13 (Chapter 3) '***Children's exposure to SHS post- vs pre-intervention***'. These variables included:

- School (full intervention, partial intervention and control)
- Gender (boys, girls)
- Grade (Grades 3, 4 and 5)
- Number of siblings (none or one sibling, having two or more than two siblings)
- Fathers' occupation (farmer, government employee, self-employed)
- Mothers' occupation (farmer, government employee, self-employed)
- Number of smokers in household (1 smoker, ≥2 smokers)
- Fathers' or others' smoking places (outdoors/remained outdoors, in-home/remained in-home)
- Change in children's knowledge post- vs pre-intervention on the harmful effects of SHS on children's health (good/remained good, not good/worse)
- Change in children's attitudes post- vs pre-intervention on avoiding exposure to SHS good/remained good, not good/worse)
- Change in children's practices post- vs pre-intervention on avoiding exposure to SHS (good/remained good, not good/worse).

Table 4.8 presents the reults from the binary logistic regression analysis. After applying the backward stepwise (Wald) method in the binary logistic regressions, at the last step (the 7th step), 5 variables remained in the model.

*Table 4.8 Factors associated with the 'Children's exposure to SHS post- vs pre-intervention' at home in the backward stepwise (Wald) method of binary logistic regression for all three schools (n = 850)**

Variables	OR**	95%CI***	*p* value
School			
Full intervention vs control	3.08	1.95-4.88	0.000
Partial intervention vs control	2.72	1.76-4.19	0.000
Grade			
Grade 4 vs Grade 3	1.73	1.23-2.63	0.011
Grade 5 vs Grade3	2.08	1.39-3.12	0.000
Parents' smoking places (outdoors)			
Outdoors/remained outdoors vs in-home/remained in-home	1.76	1.26-2.46	0.001
Change in attitudes			
Good/remained good vs not good/worse	1.92	1.39-2.66	0.000
Change in practices			
Good/remained good vs not good/worse	1.68	1.17-2.41	0.005

**The reference category for the dependent variable is non-exposed/remained non-exposed to SHS*

***Odd ratio from the binary logistic regressions at the 7th step in the model*

****CI = confidence interval*

Table 4.8 shows that post- intervention compared to pre-intervention, both the full intervention school and the partial intervention school were associated with a higher occurrence of children who were 'non-exposed/remained non-exposed' to SHS (from their self-reported answers) compared to the control school (full intervention school OR = 3.08, 95%CI: 1.95-4.88, $p < 0.001$; partial intervention school OR = 2.72, 95%CI: 1.76-4.19, $p < 0.001$). Children in Grade 4 reported a higher occurrence of 'non-exposed/remained non-exposed' to SHS than children in Grade 3 (OR = 1.73, 95%CI: 1.23-2.63, $p = 0.011$) and so did children in Grade 5 (OR = 2.08, 95%CI: 1.39-3.12, $p < 0.001$). Children who reported the fathers or other smokers maintained to smoke outdoors or changed the smoking place from indoor to outdoors had higher occurrence of 'non-exposed/remained non-exposed to SHS' than those with fathers or others still smoked indoors (OR = 1.70, 95%CI = 1.26-2.46, $p = 0.001$). Children who reported 'good/remained good' attitudes had a higher occurrence of 'non-exposed/remained non-exposed to SHS' than those reporting 'not good/worse' attitudes (OR=1.92, 95%CI: 1.39-2.66, $p < 0.001$) and so did children who reported 'good/remained good practices' (OR = 1.68, 95%CI: 1.17-2.41, $p = 0.005$) compared to those who reported 'not good/worse practices'.

4.8.2 Fathers' or other adult smokers' smoking places post- vs pre-intervention

Similarly to the model run on the variable '***Children's exposure to SHS post- vs pre-intervention***' in Section 4.8.1, a binary logistic regression model was also used to identify factors affecting the new variables created in Section 3.4.13 (Chapter 3) – '***Fathers' or others' smoking places post- vs pre-intervention***' (outdoors/remained outdoors versus in-home/remained in-home)

in all three schools. The 850 children across all three schools who reported living with smokers were included in this model.

A total of 10 independent variables (all categorical variables) were examined to identify if they were factors associated with the occurrence of smoking 'outdoors/remained outdoors' for fathers/other adult smokers living with children; the results are presented in Table 4.9. These variables included:

- School (full intervention, partial intervention and control)
- Gender (boys, girls)
- Grade (Grades 3, 4 and 5)
- Number of siblings (none or one sibling, having two or more than two siblings)
- Fathers' occupation (farmer, government employee, self-employed)
- Mothers' occupation (farmer, government employee, self-employed)
- Number of smokers in households (1 smoker, ≥2 smokers)
- Change in children's knowledge post- vs pre-intervention on the harmful effects of SHS on children's health (good/remained good, not good/worse)
- Change in children's attitudes post- vs pre-intervention on avoiding exposure to SHS (good/remained good, not good/worse)
- Change in children's practices post- vs pre-intervention on avoiding exposure to SHS (good/remained good, not good/worse).

When running this model for all three schools, the study found only two variables left at the 9th step: the variables 'school' and 'change in attitudes'. From the results in Table 4.9, it is seen that children in the full intervention school reported a higher prevalence of fathers/other adult smokers smoking outdoors or remaining outdoors, compared with those in the control school (OR = 2.06; 95%CI: 1.42-3.00, $p < 0.001$), while no significant difference in relation to the 'outdoors/remained outdoors' smoking of fathers/other adult smokers was observed between the partial intervention school and the control school (OR = 1.19, 95%CI: 0.82-1.74, $p = 0.351$). 'Good/remained good' attitudes were not associated with the occurrence of 'outdoors/remained outdoors' smoking of smokers in the children's family (OR = 1.24, 95%CI: 0.92-1.67, $p = 0.161$).

*Table 4.9 Factors associated with the 'Fathers' and others' smoking places post- vs pre-intervention' in the backward stepwise (Wald) method of binary logistic regression for the three schools (n = 850)**

Variables	OR**	95%CI***	*p value*
School			
Full intervention vs control	2.06	1.42-3.00	0.000
Partial intervention vs control	1.19	0.82-1.74	0.351
Change in attitudes			
Good/remained good vs not good/worse	1.24	0.92-1.67	0.161

**The reference category for the dependent variable is smoking outdoors/remained outdoors for smokers in the children's family*
***Odd ratio from the binary logistic regressions at the 9th step in the model*
****CI = confidence interval*

4.8.3 Change in children's knowledge of the harmful effects of SHS post- vs pre-intervention

Binary logistic regressions were used to evaluate the newly created variable '***Change in children's knowledge post- vs pre-intervention***' of the harmful effects of SHS on their health (see Section 3.4.13, Chapter 3). All data from the 1,288 children in all three schools were used in the analysis.

In total, 8 independent variables (all categorical) were used as the input variables in the model. These variables included:

- School (full intervention, partial intervention and control)
- Gender (boys, girls)
- Grade (Grade 3, 4 and 5)
- Number of siblings (none or one sibling, having two or more than two siblings)
- Fathers' occupation (farmer, government employee, self-employed)
- Mothers' occupation (farmer, government employee, self-employed)
- Living with smokers (living with smoker(s), not living with smoker(s))
- Number of smokers in household (1 smoker, ≥2 smokers)

The factors associated with the change in children's knowledge of the harmful effects of SHS (post- vs pre-intervention) are presented in Table 4.10. At the 4th step of the model, there were five variables remaining in the model: school, grade, number of siblings, fathers' occupation, and living with smokers. Based on the newly created variables in Section 3.4.13 (Chapter 3) comparing post- vs pre-intervention, the number of children in the full intervention school with knowledge in the 'good/remained good' category was 35.37 times higher than in the control school (OR = 35.37, 95%CI: 22.73-55.04, $p < 0.001$) while no significant difference was observed between children in

the partial intervention and in the control schools (OR = 1.33, 95%CI: 0.94-1.88, p = 0.11). Interestingly, children in Grade 3 had higher levels of 'good/remained good' knowledge than those in Grade 5 (OR = 8.19, 95%CI: 5.52-12.16, $p < 0.001$) and so did children in Grade 4 (OR = 4.19, 95%CI: 2.85-6.16, $p < 0.001$). Children's number of siblings was not associated with 'good/remained good' knowledge (OR = 0.70, 95%CI: 0.49-1.00, $p = 0.052$). Children who reported their fathers to be farmers exhibited higher 'good/remained good' knowledge than those who reported their fathers to be self-employed (OR = 1.45, 95%CI: 1.01-2.08, $p = 0.045$). Children who reported living with smokers had 6.8 times higher levels of 'good/remained good' knowledge than those not living with smokers (OR = 6.80, 95%CI: 4.72-9.79, $p < 0.001$).

*Table 4.10 Factors associated with the variable 'Change in children's knowledge post- vs pre-intervention' in the backward stepwise (Wald) method of binary logistic regression for the three schools (n = 1,288)**

Variables	OR**	95%CI***	*p* value
School			
Full intervention vs control	35.37	22.73- 55.04	0.000
Partial intervention vs control	1.33	0.94 -1.88	0.11
Grade			
Grade 3 vs Grade 5	8.19	5.52-12.16	0.000
Grade 4 vs Grade 5	4.19	2.85- 6.16	0.000
Number of siblings			
None or one sibling vs two or more siblings	0.70	0.49-1.00	0.052
Father's occupation			
Farmer vs self-employed	1.45	1.01-2.08	0.045
Government employees vs self-employed	1.23	0.80-1.87	0.348
Living with smokers			
Living with smoker(s) vs not living with smoker(s)	6.80	4.72-9.79	0.000

**The reference category for the dependent variable is 'good/remained good' knowledge of the harmful effects of SHS on children's health*

***Odd ratio from the binary logistic regressions at the 4th step in the model*

****CI = confidence interval*

4.8.4 Change in attitudes of children on avoiding exposure to SHS post-vs pre-intervention

Binary logistic regressions were used to evaluate the variable '***Change in children's attitudes post- vs pre-intervention***' (see Section 3.4.13, Chapter 3). The model was run using data from all 1,288 children in all three schools. In total, 9 independent variables (all categorical) were used as the input variables in the model, and the results are presented in Table 4.11. These variables include:

- School (full intervention, partial intervention and control)
- Gender (boys, girls)
- Grade (Grade 3, 4 and 5)

- Number of siblings (none or one sibling, having two or more than two siblings)
- Fathers' occupation (farmer, government employee, self-employed)
- Mothers' occupation (farmer, government employee, self-employed)
- Living with smokers (living with smoker(s), not living with smoker(s))
- Number of smokers in households (1 smoker, ≥2 smokers)
- Change in children's knowledge post- vs pre-intervention on the harmful effects of SHS on children's health (good/remained good, not good/remained poor/worse)

*Table 4.11 Factors associated with the variable 'Change in children's attitudes post- vs pre-intervention' in the backward stepwise (Wald) method of binary logistic regression for the three schools (n = 1,288)**

Variables	**OR****	**95%CI*****	***p* value**
School			
Full intervention vs control	2.68	1.92-3.74	0.000
Partial intervention vs control	1.22	0.93-1.59	0.158
Living with smokers			
Living with smokers vs not living with smokers	2.11	1.63-2.72	0.000
Change in knowledge			
Good/remained good vs not good/ worse	1.30	0.98-1.72	0.075

**The reference category for the dependent variable is 'good/remained good' attitudes of children on avoiding SHS and on persuading adults not to smoke in the home*

***Odd ratio from the binary logistic regressions at the 7th step in the model*

****CI = confidence interval*

Table 4.11 indicates that at the 7th step, there were only three variables remaining in the model. Children in the full intervention school showed 2.68 times higher levels of 'good/remained good' attitudes compared to children in the control school (OR = 2.68, 95%CI: 1.92-3.74, $p < 0.001$), while no significant difference was observed between the partial intervention and the control school (OR = 1.22, 95%CI: 0.93-1.59, $p = 0.158$). Children who lived with smokers showed 2.11 times higher levels of 'good/remained good' attitudes than those who did not live with smokers (OR = 2.11, 95%CI: 1.63-2.72, $p < 0.001$). The change in children's knowledge was not associated with the change in children's attitudes (OR = 1.30, 95%CI: 0.98-1.72, $p = 0.075$).

4.8.5 Change in children's practices on avoiding exposure to SHS post- vs pre-intervention

Binary logistic regressions (backward stepwise method) were used to evaluate factors that might be associated with the variable '***Change in children's practices post- vs pre-intervention***' (see Section 3.4.13, Chapter 3). The model was run using data from all 850 children in the three selected schools who reported living with smokers.

A total of 9 independent input variables (all categorical variables) were examined to identify whether they were associated with the change in children's practices post- vs pre-intervention (good/remained good vs not good/worse). These variables included:

- School (full intervention, partial intervention and control)
- Gender (boys, girls)
- Grade (Grade 3, 4 and 5)
- Number of siblings (none or one sibling, having two or more than two siblings)
- Fathers' occupation (farmer, government employee, self-employed)
- Mothers' occupation (farmer, government employee, self-employed)
- Number of smokers in households (1 smoker, ≥2 smokers)
- Change in children's knowledge post- vs pre-intervention on the harmful effects of SHS on children's health (good/remained good, not good/remained poor/ worse)
- Change in children's attitudes post- vs pre-intervention on avoiding exposure to SHS (good/remained good, not good/remained poor/worse).

Table 4.12 illustrates the correlations of independent variables with the change in children's practices on avoiding exposure to SHS post- vs pre-intervention. At the 7th step of the model, there were only 3 variables left: school, number of siblings, and the change in children's attitudes. Children in the full intervention school reported higher levels of 'good/remained good' practices than their counterparts in the control school (OR = 6.30, 95%CI: 4.10-9.70, $p < 0.001$), while no significant difference was discovered between the partial intervention and the control schools (OR = 1.42, 95%CI: 0.90-2.23, $p = 0.129$). Children who had no siblings or one sibling reported higher levels of 'good/remained good' practices than those who had two or more siblings (OR = 1.76, 95%CI = 1.13-2.73, $p = 0.012$). Children who exhibited 'good/remained good' attitudes reported higher levels of 'good/remained good' practices than those who exhibited 'not good/remained poor/worse' attitudes (OR = 2.25, 95%CI = 1.62-3.14, $p < 0.001$).

*Table 4.12 Factors associated with the 'Change in children's practices post- vs pre-intervention' in the backward stepwise (Wald) method of binary logistic regression for the three schools (n = 850)**

Variables	OR**	95%CI***	*p* value
School			
Full intervention vs control	6.30	4.10-9.70	0.000
Partial intervention vs control	1.42	0.90-2.23	0.129
Number of siblings			
None or having one sibling vs having two or more than two siblings	1.76	1.13-2.73	0.012
Change in attitudes			
Good/remained good vs not good/worse	2.25	1.62-3.14	0.000

**The reference category for the dependent variable is good/remained good practices of children on avoiding SHS and on persuading adults not to smoke in the home*

***Odd ratio from the binary logistic regressions at the 7th step in the model*

****CI = confidence interval*

4.9 Discussion

4.9.1 Characteristics of the study participants

The response rate for this study was 98.2% pre-intervention and 96.7% post-intervention (Table 4.1). The mean age of children participating in the current study aligned with the age structure of the primary education program in Vietnam, as regulated in the Law of Education. The Law states that children must start going to primary school at the age of 6, and may attend until the age of 14 (The National Assembly of Vietnam, 2005a). The study found no significant differences between children in the three selected schools, in terms of characteristics such as age, grade, gender or number of siblings. Most participants were either the only child in the family or had one sibling (78.1%), which reflects the voluntary two-child policy of the government (The National Assembly of Vietnam, 2008b). However, significant differences in parents' occupations were found among the children within the three selected schools, with half the children reporting their fathers to be farmers, and approximately two-thirds reporting their mothers as farmers.

4.9.2 The situation of children living with smokers

The current study indicated a high overall proportion of children who reported living with smokers (66%) (Figure 4.1), which was similar to the estimates by different respondents in the study who participated in the FGDs and IDIs. These informants estimated that there were about 60–70% of male adults in the locality who smoke.

The proportion of children living with smokers in this study (66%) is similar to that found by other studies conducted in Vietnam, ranging from 55% to more than 70%, depending on the children's age and the locations of the studies (Huong et al., 2011, Minh et al., 2007, Suzuki et al., 2009). The current study showed a higher percentage of children living with smoker(s) than found in a Malaysian study, where 52.9% of children 10 to 11 years of age lived with at least one smoker (Abidin et al., 2011). In another comparison, a German study found that 50.0% of children 3 to 14 years of age lived with at least one smoker (50.0%) (Conrad et al., 2010). This baseline data was also compared to baseline data in two interventions in Pakistan and England; the prevalence of children in the current study living with smokers was higher than in both Pakistan (57.5%) (Siddiqi et al., 2010) and in England (54%) (Alwan et al., 2011).

Among the 66% of children living with smokers, 52.8% of them lived with one smoker and 13.2% lived with two or more smokers (Figure 4.2). These figures, although high, were still lower than the result found in a study conducted in Thai Binh, a province in the Red River Delta region of Vietnam, where 63% of households of women and children lived with one smoker and another 17% with two smokers (Wipfli et al., 2009). The results of this study were very similar to the results obtained in a pilot study with children in the same age group (8 to 11 years of age) in a semi-rural area of the same district (Huong et al., 2011); 48.7% of children reported living with one smoker, and 11.3% with two smokers or more.

There are cultural reasons for the common occurrence of smoking in the three communes in the study, and in Vietnam generally, especially in the rural areas. For many years, smoking has been a traditional custom and is part of a culture of hospitality between hosts and their guests and visitors. Smoking is very common at social and community events such as weddings and funerals, and these customs result in smoking being very common, which creates challenges in tobacco control in Vietnam (Nga and Ha, 2007, VINACOSH, 2013). According to Nga and Ha (2007), overall 18.6% of men participating in their study reported that refusing to smoke when invited was impolite in many cases and an additional 22.1% considered the refusal was impolite in certain cases. These percentages among the female participants were 12.4% and 13.5% respectively. This social acceptance contributes to the high occurrence of smoking in the community (Nga and Ha, 2007). In addition to the social acceptance of smoking in Vietnam, the limited understanding of the harmful effects of smoking on the smokers themselves and on non-smokers was also related to the high prevalence of smoking among the fathers and other adults in the study population (Nga and Ha, 2007).

Almost all smokers reported by children in the study were male (mainly their fathers), while only 0.9% of the children reported living with female smokers (who were their grandmothers). The main forms of tobacco use in the locality were cigarettes and water pipes. These findings were very similar to the results of a national survey where 47.4% of adult males and only 1.4% of adult females were smokers, and the major forms of tobacco use were cigarettes (83.7%) and water pipes (26.9%) (MOH, 2010).

4.9.3 The situation of children's exposure to SHS

Smoking indoors by fathers and other adult smokers

Pre-intervention, a total of 78.5% of children living with smokers reported that their fathers or other adult smokers smoked in the home (Figure 4.3), which constituted an overall of 51.8% of all 1,288 recruited children living with in-home smokers. This percentage was lower than that found by a study in central Vietnam, where 63.5% children under 5 years of age lived with 'indoor smokers' (Suzuki et al., 2009). The current study also indicated that the overall proportion of children living with in-home smokers was lower than that found by another study in the north of Vietnam, where 97% of smokers reported frequently smoking in the home, and 87% admitted recurrent smoking in children's vicinity (Wipfli et al., 2009).

Post-intervention, the prevalence of fathers who frequently smoked in the home, as reported by children at the full intervention school, decreased significantly (from 83.0% to 59.8%), while almost no differences occurred in the other two schools. This result was again confirmed by the binary logistic regression model (Table 4.9). This impressive result demonstrated the success of the intervention program, with many of the in-home smokers in the full intervention school having changed their smoking behaviour to smoke outdoors. This outcome was one of the expected outcomes of the intervention program, and confirmed the study hypothesis that 'After the intervention, parents of children will significantly change their smoking pattern from inside the home to outdoors'. Similar results were also obtained in different 'smoke-free home' interventions applying similar approaches of teaching about SHS at primary schools in Portugal (Precioso et al., 2010), Pakistan (Siddiqi et al., 2010) and England (Alwan et al., 2011).

With more than a 20% reduction of in-home smokers at the conclusion of the intervention (83.0% to 59.8%), the current study showed a better intervention result than an intervention study in a north-eastern province of Vietnam where there was only a 9.2% reduction in in-home smokers ($p > 0.05$) (Hai et al., 2006). The results of the current study are more impressive than those of another intervention study in three provinces in Vietnam, which decreased the number of men who

smoked in the living room from 87.5% to 83.4%, in the dining room from 49.8% to 43.1% and in the bedroom from 31.0% to 26.0% (Nga and Ha, 2007). However, the comparative study did present the in-home smoking locations separately, which was not done in the current study.

Children's exposure to SHS at home

Pre-intervention, the prevalence of children in the partial intervention school reporting exposure to SHS at home was significantly lower than for their counterparts in the full intervention school and the control school (Figure 4.5). The study tried to find reasons for this difference by looking at other demographic characteristics of children and their families. However, no significant differences were discovered between the prevalence of children's self-reported exposure to SHS and their gender, number of siblings, their parents' occupations, and number of smoker(s) that they lived with. The only difference in relation to children's self-reported exposure to SHS at home was according to their grade/age. However, as shown in Table 4.3, there were no significant differences between children's age and grades in all three schools. As the three schools were selected to meet the same criteria and then were randomly categorised as the full intervention school, the partial intervention school and the control school (Chapter 3, Section 3.4.4), it is therefore suggested that this difference in children's self-reported exposure to SHS at home at the beginning of the study was a random occurrence.

The overall prevalence of children's reported exposure to SHS in this current study (Figure 4.5) was much higher than in the pilot study with the same age group in another primary school in the same district, where only 38.3% children in Grade 3 to Grade 5 reported their exposure to SHS at home (Huong et al., 2011). However, the sample size of the pilot study was only 72 children, which was much lower than the current study. In addition, the pilot primary school is located in the semi-rural area of the central town of the district, while the three schools selected for the current study are in rural communes of this district. The differences in the sample size and the locations could explain the different percentages of children reporting exposure to SHS at home.

The current study showed a lower percentage of children's exposure to SHS than found by Minh et al. (2007) for children aged less than 6 years (64.8%), and also than found by Suzuki et al. (2009) (70.5%). However, the subjects in the studies by Minh et. al (2007) and Suzuki et al. (2009) were infants and children up to 6 years of age who therefore spent more time at home than the children in the current study, who spent a large portion of the day at school.

After the intervention, there was a significant decline in the proportion of children in the full intervention school who reported their exposure to SHS at home (from 86.4% to 59.8%), and this

self-reported proportion of SHS exposure was significantly lower than that for the other two schools. This impressive reduction in the prevalence of in-home exposure to SHS among children in the full intervention school is a further positive indication of the success of the intervention program, and one of its expected outcomes. The significant reduction in the prevalence of recurrent in-home smokers for children in the full intervention school may have resulted in the significant decline in children's self-reported exposure to SHS at home. This result is in line with the conclusion of the WHO in its 2009 report that the home environment is the main environment where children are exposed to SHS (WHO, 2009), and therefore that decreasing the number of in-home smokers could lead to a reduction in children's exposure to SHS. The binary logistic regression model (Table 4.8) indicated that children in both the intervention school and the partial intervention school reported lower exposure to SHS at home post-intervention compared to the control school. It is possible that this result in the partial intervention school is related to the original lower prevalence of self-reported exposure to SHS pre-intervention, compared to the full intervention and the control schools (Figure 4.5). From the results of the current study, it can be concluded that the hypothesis 'After the intervention, the exposure of children to SHS will decrease significantly' has been confirmed.

Through various FGDs and IDIs with children, parents and teachers from all three schools, it was revealed that, among smokers who still smoked indoors or in the home, the living room was the main smoking location. This finding was similar to the results found in the study conducted by Nga and Ha (2007) and Hai et al. (2006) that the living room was the main location of smoking in the home, and this resulted in children's high levels of exposure to SHS. Watching favourite programs on television seemed to be the main reason for children's reluctance to avoid SHS and for their smoker fathers to forget to remind children to go away from the SHS in the partial intervention and the control schools. In addition, ineffective 'methods' of avoiding exposure to SHS used by these children, such as closing their nostrils with their hand, waving the SHS away, or trying to breathe by mouth instead of by nose, might have been reasons contributed to the unchanged prevalence of children's reported exposure to SHS after the intervention.

The positive results of the current study are similar to those of an intervention study conducted in three provinces in Vietnam. In the current study, the 26.6% post-intervention decline in children exposed to SHS among 264 children living with smoker(s) in the full intervention school (from 86.4% to 59.8%) was higher than the 19.8% decline in children exposed to SHS in the three-province study (Nga and Ha, 2007). The intervention program conducted in Quang Ninh, a north-eastern province of Vietnam, by Hai et al. (2006) also showed that the exposure to SHS among children in the study decreased significantly post-intervention; however, that study measured the

exposure of children to SHS by their urinary cotinine level, while this current study and the study by Nga and Ha (2007) could not undertake cotinine biomarker tests and obtained results only through verbal or written responses by the study subjects.

A comparison of the results obtained in this study with those of intervention studies in other countries revealed that an English study (Alwan et al., 2011) showed a statistical reduction in SHS exposure of 15% among children 9 to 11 years of age in primary schools (the reduction found in the current study was 26.6% among children living with smokers). Another 'smoke free home' intervention in Portugal also achieved a remarkable reduction (nearly 17%) in children's exposure to SHS at home; similarly to the current study, this study also collected data through self-administered questionnaires completed by children in a classroom setting (Precioso et al., 2010).

The current study found no significant differences in the prevalence of children who reported their exposure to SHS at home by gender, number of siblings, fathers' occupations, mothers' occupations, and the number of smoker(s) that children lived with. The insignificant differences in the prevalence of children exposed to SHS by gender was similar to the result found by Ding et al. (2010) in San Diego, California (USA).

There were some significant differences in SHS exposure related to grade at school. It was determined from the binary logistic regressions (Table 4.8) that children in Grade 4 and Grade 5 reported lower exposure to SHS at home than those in Grade 3. A possible explanation is that the children in Grade 4 and 5 were older than those in Grade 3 and therefore might have more successfully avoided exposure to SHS.

Many studies have suggested that children's exposure to SHS is related to low income status of the family (Kit et al., 2013) or children's parental educational level (Lin et al., 2010, Radic et al., 2011), or knowledge and attitudes of mothers on SHS (Lin et al., 2010). However, in the current study, information regarding family income and parental educational level could not be collected due to children's limited awareness of this information. Non-responses or unreliable answers might have been obtained if the study had tried to collect such information from the children.

4.9.4 Children's knowledge, attitudes and practices on SHS

The study results showed that children's knowledge on the harmful effects of SHS on their health, and their attitudes and practices on avoiding SHS exposure improved significantly in all three selected schools. However, the greatest improvement was observed among children in the full intervention school.

Children's knowledge on the detrimental health impacts of SHS

Chidlren's knowledge on the detrimental health impacts of SHS increased in all three schools post-intervention, both in mean score (Table 4.5) and in the levels of knowledge (Figure 4.7).

A comparison of children's level of knowledge showed that only a small percentage of children in all three schools reached the highest level of knowledge (categorised as 'good' in the study) at the pre-intervention. Overall, only 3.4% of children in all three schools reached this level, and no significant differences were found in this level between the three schools (Figure 4.7). This percentage of children achieving 'good' knowledge was much lower than that found by Ding et al. (2010) in their study in San Diego, California (USA), in which 81% pre-teenage children 'had a lot of knowledge' on SHS and its harmful effects. However, the ages of children in that study were from 8 to 13; two age groups (12 and 13) were older than the current study's participants (8 to 11 years), and therefore their knowledge is likely to be better. Many factors could contribute to the difference in children's knowledge in these two studies, such as different assessment scales in categorising children's knowledge, different accessibility to tobacco and SHS information, and differences in SHS education in the primary education curricula between Vietnam and the USA. In the Vietnamese context, the result that only 3.4% children of primary school age reached the 'good' level of knowledge was not surprising because even adults did not understand clearly the harmful effects of SHS on non-smokers. In a study in a north-eastern province of Vietnam, 25.0% adults did not understand that SHS might have detrimental health effects on non-smokers, and 13.1% of them even believed that SHS had no negative impacts on the health of non-smokers (Hai et al., 2006).

After the intervention, knowledge on the harmful effects of SHS among children in the three selected schools increased significantly, with the highest increase for children in the full intervention school. Of the children in this school, 81.4% reached the 'good' level of knowledge on SHS, while these percentages in the partial intervention and the control schools were 25.8% and 22.4% respectively. In the Vietnamese primary education curriculum, the content on tobacco control and the harmful effects of SHS is restricted to only two sections of two lessons, one in the Grade 3 subject Nature and Society (Nga et al., 2010b) and one in the Grade 5 subject Sciences (Nga and Thai, 2009a). This inclusion could explain the better knowledge on SHS of children at the partial intervention and the control schools, although these two schools did not receive any intervention activities from the program. However, it is suggested that the greater improvement in children's knowledge at the full intervention school (Figure 4.7) means that the SHS intervention program had significantly contributed to the advancement of those children's knowledge (this was

reconfirmed by the binary logistic regression model (Table 4.10)). Many other intervention studies in various areas of public health also revealed that the participating children had attained significantly better knowledge at the conclusion of the interventions (Rohde and Sadjimin, 1980, Onyango-Ouma et al., 2005, Sonavane et al., 2012, Olayiwole et al., 2003, Winch et al., 2002).

Interestingly, results from the binary logistic regression model (Table 4.10) showed that children in Grades 3 and 4 had better knowledge of SHS than their counterparts in Grade 5. This was contrary to the results found in the pilot study by Huong et al. (2011) that children in Grade 5 had the best knowledge, followed by those in Grade 3 and then by children in Grade 4. With the general primary education curriculum including content on smoking and SHS in Grade 3 (Nga et al., 2010b) and Grade 5 (Nga and Thai, 2009a), the study could not explain why children in Grade 5 had worse knowledge on SHS than those in Grade 3 and Grade 4.

4.9.5 Children's attitudes on preventing SHS exposure at home

The results of the study show that children in all three selected schools demonstrated better attitudes on preventing SHS exposure at home, both in terms of mean score (Table 4.6) and in attaining the 'good' level (Figure 4.8) at the conclusion of the intervention. The improvement in children's attitudes could be partly due to the teaching of curriculum content about tobacco in Grade 3 (Nga et al., 2010b) and in Grade 5 (Nga and Thai, 2009a) as mentioned in the previous section. This connection is evidenced in the results of the pilot study by Huong et al. (2011) in the same district, with almost all children who participated showing their unhappy feelings when they saw their fathers or anyone else smoking in the home.

However, the improvement in attitudes among children in the full intervention school was much better than that of their counterparts in the partial intervention and the control schools. Apart from being exposed to the same teaching content related to tobacco control in the primary education program in Grade 3 and Grade 5, children in the full intervention school were being taught about SHS for the whole 6 months. The intervention could be a factor that contributed to the better attitudes of children in this school compared to the other two schools. This result was reaffirmed by the binary logistic regression model presented in Table 4.11.

The results in other intervention studies on the prevention of children's exposure to SHS at home also showed that better attitudes were recorded among the children involved in the intervention, and that children felt more confident when talking with smokers in their family about making their homes free from SHS (Siddiqi et al., 2010, Alwan et al., 2011).

The study found no differences between children's attitudes associated with demographic charactersitics such as grade, gender, number of siblings, number of smokers in their family, and their fathers' and mothers' occupations. These results were similar to those of the pilot study conducted in the same district in 2011 (Huong et al., 2011). However, currently living with smokers was a factor contributing to better attitudes to SHS among children, as indicated by the binary logistic regression model (Table 4.11).

4.9.6 Children's practices on preventing SHS exposure at home

The study revealed that, similarly to the trend found in knowledge and attitudes, there was a post-intervention improvement in all three schools in children's practices on preventing SHS exposure at home (Table 4.7 and Figure 4.9). The improvement was both in mean score and in 'good' practice level. This progress was partly attributable to the teaching about tobacco in the primary education curriculum in Grade 3 and Grade 5 (Nga et al., 2010b, Nga and Thai, 2009a). However, the most impressive improvement was recorded among children in the full intervention school, and was allied to the post-intervention improvement in the knowledge and attitudes of children in this school .

The marked improvement in children's practices (both in mean score and in achieving a 'good' level) in the full intervention school might imply that the intervention program played an important role in assisting children to achieve better practices compared to the other two schools. This result was confirmed by the binary logistic regression model (Table 4.12). Other intervention programs in many fields of public health also showed a convincing improvement in children's practices after the intervention, such as in hygiene and diarrhoea prevention in Indonesia (Rohde and Sadjimin, 1980), dengue prevention in Puerto Rico (Winch et al., 2002), water and environmental sanitation in Nigeria (Olayiwole et al., 2003), hygiene, malaria and diarrhoea in Kenya (Onyango-Ouma et al., 2005), hygiene and hand-washing in China (Bowen et al., 2007), and hand-washing with soap in Vietnam (Xuan et al., 2013).

The study found no significant differences in relation to children's practice levels and demographic characteristics such as grade, gender, number of smokers in children's families, fathers' and mothers' occupations (Table 4.12); these results were similar to those of the pilot study in the same district in 2011 (Huong et al., 2011). However, children who reported having no siblings or only one sibling reported better practices on SHS than those with two or more siblings. Children who had better attitudes on SHS also reported better practices.

In conclusion, after the intervention, children's KAP on SHS in the full intervention school had improved greatly. These results confirm one of the study hypotheses that 'After the intervention, children's KAP on SHS will have improved significantly'.

4.10 Summary

In general, the results of the study indicated that 66% of the recruited children reported currently living with smokers, with 52.8% living with one smoker and 13.2% living with two or more smokers. The occurrence of smoking indoors as reported by children in the three selected primary schools was common, with the prevalence of 83.0%, 77.5% and 75.2% in the full intervention school, partial intervention school and control school respectively. This is suggested to be related to the high prevalence of self-reported exposure to SHS at home among the recruited children pre-intervention. However, after the intervention at the full intervention school, there was a significant drop in the percentage of fathers/adult smokers who smoked in the home (59.8% down from 83.0%), while no significant changes were observed in the partial intervention and the control schools. The change in adult smoking habits might have contributed to a sharp reduction post-intervention in the exposure of children to SHS at home in the full intervention school (59.8%) compared to pre-intervention (86.4%), while no significant changes occurred in the partial intervention and the control schools.

Regarding children's knowledge, attitudes and practices on SHS, the results of this study show that, after the intervention, children in the full intervention school showed significant improvements in their knowledge, attitudes and practices mean score, compared to children in the other two schools. In regard to their knowledge, attitude and practice levels, a similar trend was also found among children in the full intervention school post-intervention. Children at the full intervention school reported higher 'good' levels of knowledge, attitudes and practices post-intervention than their counterparts in the partial intervention and the control schools, while no significant differences were observed in these two schools. These convincing improvements in children's knowledge, attitudes and practices on the issue of SHS in the full intervention school, especially children's practices, is suggested to have resulted in the sharp reduction in their exposure to SHS at home.

The above findings, as discussed in this chapter, have confirmed three among the four study hypotheses:

1. After the intervention, the exposure of children to SHS will decrease significantly.
2. After the intervention, parents of children will significantly change their smoking pattern from inside the home to outdoors.
3. After the intervention, children's KAP on SHS will have improved significantly.

Chapter 5 Children as Change Agents Influencing Smokers not to Smoke in the Home

5.1 Introduction

The previous chapters presented data on the self-reported exposure to secondhand smoke (SHS); the location where children's fathers and other adults smoke; the knowledge, attitudes and practices (KAP) of children in relation to the harmful effects of SHS and the avoidance of exposure to SHS. It was revealed in Chapter 4 that after the intervention, the percentage of children reporting that their fathers/other adults in their family smoked in the home decreased significantly, and so did children's self-reported exposure to SHS. In addition, children's KAP had improved significantly post-intervention, with the KAP of children in the full intervention school significantly higher than that of their counterparts in the other two schools. Chapter 4 also reported that the effectiveness of the intervention program was validated by applying binary logistics regressions using the backward stepwise method. The results showed that children in the full intervention school reported a higher occurrence of non-exposure to SHS at home than those in the partial intervention and the control schools. They also reported a higher occurrence of outdoor smoking by their fathers and other smokers sharing their home, and of good knowledge, attitudes and practices in avoiding SHS exposure and in persuading fathers and other smokers not to smoke in the home.

Chapter 5 will validate the last hypothesis of the study that 'After the intervention, the children's capacity to persuade adults not to smoke inside the home will be confirmed'. This chapter focuses on exploring the capacity of children as agents of change to explain the harmful effects of SHS to their family members and persuading their fathers and other adult smokers in their home to go outside to smoke. This chapter mainly uses qualitative data, primarily from focus group discussions (FGDs) and in-depth interviews (IDIs) with different target groups in the full intervention school. However, some quantitative data obtained from children in the full intervention school on what they did at school and at home during the intervention was also used in the analysis. For this, chi-square tests were used to identify any differences with regard to gender, grade at school, number of siblings, father's and mother's occupations, and number of smokers in the family.

5.2 Children as change agents in altering their fathers' and others' smoking pattern

5.2.1 Children's belief in their capacity to influence their fathers' and others' smoking pattern

The results from the two FGDs conducted with primary school children in Grade 3 and Grades 4 and 5 in the full intervention school reflected that children confidently believed they could influence their fathers or other adults not to smoke in the home. They gave various reasons for their confidence, including the theory taught by their teachers, and their attitudes and skills in convincing parents to smoke outdoors that they had acquired through various scenarios and role-plays in class. With the scenarios, they had not only acted these out in class in role-plays, but had also shared views and discussions with their peers in class. Having successfully persuaded their fathers to go out to smoke was one of the main reasons leading to children's belief that they could persuade other adults not to smoke in the home.

> *Miss, it might be different [the scenarios might be different to the real situation at home], but we did participate in many role-plays in class … for example, one day I acted as a child who was persuading the father … on the other day I acted as a child persuading the grandfather, etc. And teacher also helped us to identify in which scenario we should not persuade fathers but go outside ourselves instead, in which scenario we should persuade fathers, in which scenario we should ask for mothers' help. Therefore I believe that I could persuade [my father] ... At home I applied [what I learned] and I was successful … [in persuading my father not to smoke in the home]*. (FGD with primary school children in Grades 4 and 5, full intervention school).

> *My teacher asked us to share examples from home [of persuading fathers not to smoke in the home]. We shared and others [classmates] commented, and she [the teacher] concluded and she said to us that … she explained … to us … what we did at home was right … She also said to others about what … what they commented on our example … [whether the comments] are appropriate or not ...* (FGD with primary school children in Grades 4 and 5, full intervention school).

Figure 5.1 shows the proportion of children in the full intervention school who believed in their capacity to persuade their fathers and other adults in their family not to smoke in the home, on the basis of what they were taught at school about SHS and persuading fathers and other smokers not to smoke in the home. Of 397 children in the full intervention school, 87.9% believed post-intervention in their own capacity to persuade their fathers and other adults not to smoke in the home. Children in Grade 5 had the lowest level of belief (78.2%), followed by children in Grade 4 (89.4%), while children in Grade 3 reported the highest confidence (98.2%) ($p < 0.001$).

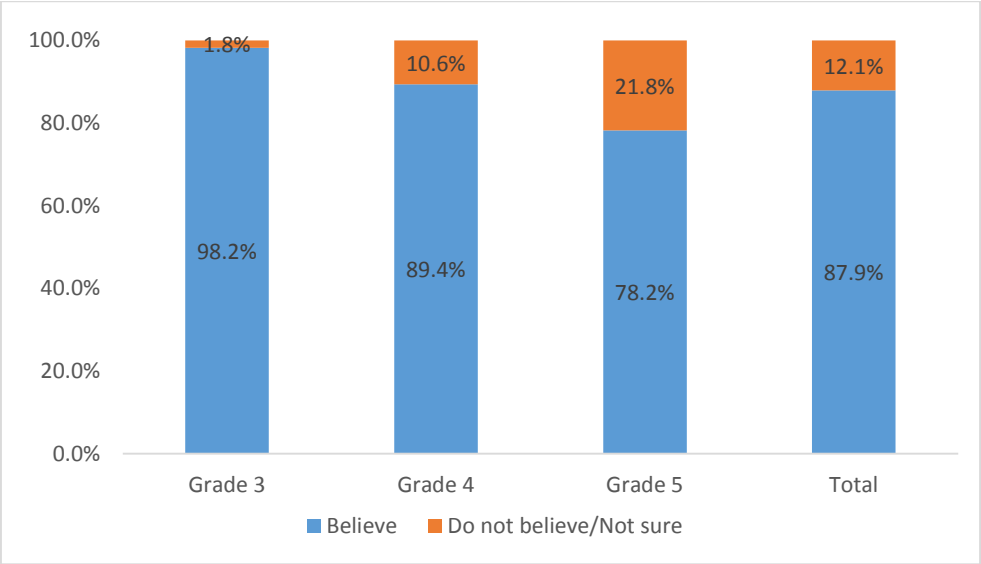


Figure 5.1 Comparison by grade of children's belief in their own capacity to persuade fathers and other adults in their families not to smoke in the home, full intervention school

When considering the confidence of children in their capacity to persuade fathers and others not to smoke in the home in relation to children's gender, it was revealed (see Figure 5.2) that, in the full intervention school, girls showed higher confidence than boys, and this difference was significant ($\chi^2 = 5.618$, $df = 1$, $p = 0.018$).

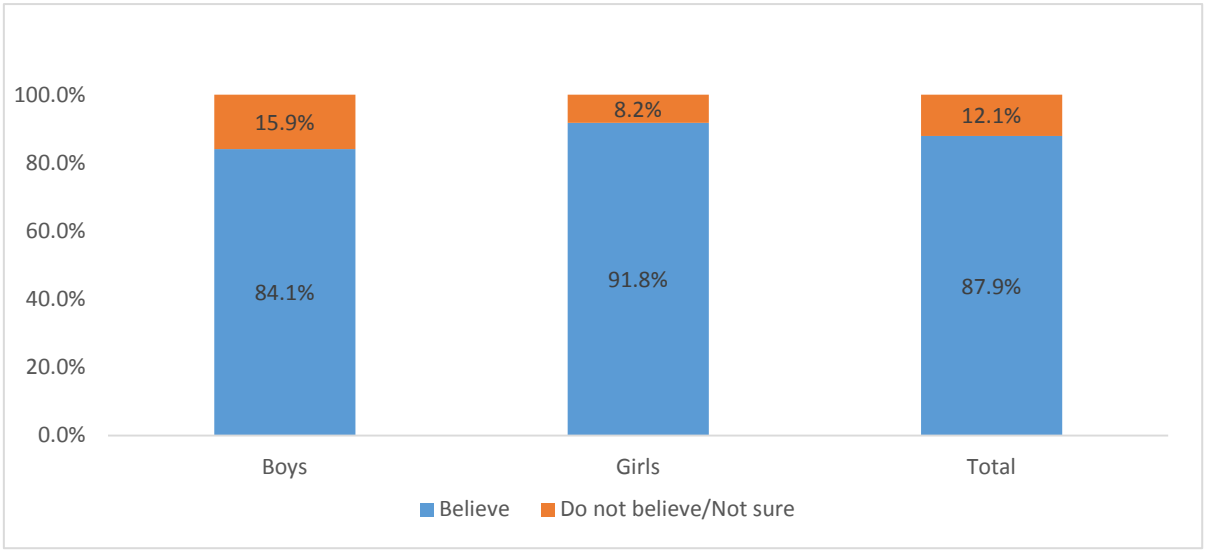


Figure 5.2 Comparison by gender of children's belief in their own capacity to persuade fathers and other adults in their families not to smoke in the home, full intervention school

The study found no significant difference in the prevalence of children who expressed their confidence in persuading their fathers or other smokers to go outside to smoke with regard to

number of siblings of the children, their fathers' and their mothers' occupations, and the number of smokers in the family.

5.2.2 Teachers' belief in children's capacity to influence their fathers' smoking pattern

Teachers in the full intervention school believed that their pupils could successfully persuade fathers and other adults not to smoke in the home. Teachers reported that their pupils' awareness of the harmful effects of SHS increased remarkably, contributing to the improvement in their attitudes and practices on the avoidance of SHS exposure and the persuasion of adults to smoke outdoors. Teachers also reported that, during the teaching sessions in class, children could describe the composition of SHS and what health impacts SHS might have on themselves, and they discussed with their peers what to do to avoid exposure to SHS and to convince smokers to smoke outdoors in different scenarios. These improvements in KAP were considered as one of the successes of the program and demonstrated its feasibility, as mentioned by a teacher in the focus group discussion.

> *The feasibility [feasibility of the intervention program] also appeared this morning when I asked them to fill in the questionnaire [the self-administered questionnaire]. They seemed so excited, and it was totally different from the time I asked them to fill [in the questionnaire] at the beginning [the pre-intervention data collection at the beginning of the school year]. They felt more confident in filling in the questionnaire. It means that they had practised in their lives and they wanted to show something that they did.* (FGD with teachers, full intervention school).

One reason for the increase in children's awareness was the active teaching–learning method. Repeating concepts to help children remember the content of the teaching and using 'questions and answers' were applied by all teachers of Grade 3 to Grade 5 in the full intervention school.

> *For example, in Bullet 1 [Lesson 1], we taught them carefully on the concept and composition of SHS. We repeated and repeated to help them remember this content, and asked them to answer our questions. Then we finished this lesson because it was quite short. Then in Bullet 2 [Lesson 2] on 'What are the harmful effects of SHS' we again required children to revise the previous lesson and remember the main content of that lesson before we started to teach Bullet 2.* (FGD with teachers, full intervention school).

In addition, all teachers had applied role-plays in their teaching sessions. Scenarios used in these role-plays were based on teacher's experiences and on what children had shared with their teachers regarding their negotiation and persuasion at home with fathers who smoke. Different scenarios were developed and shared among teachers. These scenarios were role-played by children in class to help them be ready to respond to various situations that might arise at home when they

wanted to explain about SHS and persuade fathers to smoke outdoors. All teachers reported that children were interested in the program and participated actively in the role-plays and the teaching sessions, and these practices were seen as 'attractive' to children.

> *These scenarios, we created them based on what we observed in reality, based on our experiences. But we also discussed with different children what had happened when they asked their fathers not to smoke in the home … then we used this as a basis for the development of our scenarios.* (FGD with teachers, full intervention school).

> *Talking about the role-play in this intervention, they [children] liked it very much, because they wanted to show themselves in class. And this approach also made them become more confident, not only in tobacco smoke exposure prevention, but also in many other areas.* (FGD with teachers, full intervention school).

The topic 'What you've done at home to prevent your exposure to SHS' was regularly discussed in class to encourage children to share what they did at home with their teachers and their peers. Through this session, teachers helped children to seek comments from their peers on their actions at home. Teachers then worked together with children to analyse and identify appropriate solutions that children should apply when persuading adults in their own families not to smoke in the home. In line with the teachers' belief, children were more likely to be successful in persuading their fathers not to smoke in the home after acquiring information on SHS and gaining skills through different role-plays and sharing with their peers and friends in class.

Children were encouraged by their teachers to share, in class or privately with the teacher, their real situations in relation to persuading fathers not to smoke in the home. As mentioned above, when sharing publicly in class, children could receive comments from peers. Sharing privately with their teachers, they could share information that they might not feel comfortable about sharing with their peers. Based on what had been discussed with children, the teachers continued encouraging children about what had been achieved and what needed to be continued, as well as asking them to find help and support from their mothers if their fathers became angry because of children's attempts at persuasion.

> *We often asked our students to discuss in class before and after the role-play. We asked them to share their thoughts and their feelings with their classmates, and we required the students themselves and their classmates to give comments on what they should do at home.* (FGD with teachers, full intervention school).

> *Some [some students] said to me that they only dared to talk to their fathers but not to their guests who smoked inside their homes. With those students, I had to encourage them, and asked them to*

either go away from the tobacco smoke or talk with their fathers and guests gently to make them understand step-by-step. (FGD with teachers, full intervention school)

A student said to me that when he asked his father not to smoke in the home, his father said 'yes' but still smoked there. I advised him to ask his mother for help. Then after that he said to me when he asked his mother for help, his father agreed to go outside to smoke. (FGD with teachers, full intervention school).

Teachers believed that gaining better awareness on the issue of SHS and achieving positive attitudes and better practices on the prevention of SHS exposure as well as persuading adults not to smoke in the home would help to prevent children from taking up smoking when they become older. Apart from that, according to teachers, children were familiar with the concepts of making offers and making requests through the subject Ethics since they were in Grade 2, and this skill was reinforced again in this subject in Grade 3. Additionally, children were familiar with the skills for communicating with peers, teachers and family members through the subject Ethics in Grade 4. These circumstances made the teachers in the full intervention school strongly believe that their pupils could be effective change agents in getting their fathers and other smokers in their family to smoke outdoors.

A summary note from a supervision by the principal investigator of Class 5B at the full intervention school is presented in Box 5.1 to epitomise the teaching methods applied in class during the intervention and to illustrate the teachers' perception on the capacity of children to successfully persuade fathers and other adult smokers not to smoke in the home.

Box 5.1 A summary note about supervision of a teaching session on SHS in Class 5B at the full intervention school

The supervision was undertaken in April 2012 in Class 5B. The teacher explained to the class about the presence of the supervisor and the purpose of the supervision, and asked all of her pupils to focus on their study as usual. The lesson lasted for 30 minutes.

The teaching subject was 'To convince fathers to smoke outdoors'. At the beginning, children were required to revise content that they had been taught in previous subjects: the symptoms and diseases caused by SHS, and what children should do to avoid exposure to SHS. The review session lasted for about 10 minutes. Then the teacher gave her pupils the following scenario: 'Minh's father had finished a hard working day and just returned home tired. On returning home, he sat down on the sofa to drink a cup of tea and he started smoking while Minh and his younger sister were watching TV nearby. According to you, what should Minh and his sister do?'

The teacher required all of her pupils in class to discuss the possible solutions in pairs for

10 minutes, then she received the solutions from her pupils and wrote down all of them on the blackboard. She then asked the pupils to explain why they chose those solutions, and asked them to consider if the solutions were appropriate. Working together with the children, the teacher helped them to adopt solutions that best suited this scenario. The solution that was chosen by many of the pupils in this class was: 'Minh and his younger sister should go away to prevent exposure to SHS from his father smoking. When his father has recovered from his tiredness, Minh could discuss with him the harmful effects of SHS to Minh's and his sister's health and convince his father not to smoke in the home'. This section lasted for 10 minutes.

In the last 5 minutes, the teacher reminded the pupils of what they learnt and discussed during the lesson, and asked them to prepare for the next lesson: 'Role-play to convince Minh's father not to smoke in the home'.

Source: Adapted from the notes of the principal investigator in one of her supervisions at the full intervention school during the intervention.

5.2.3 Children's contribution to parental awareness on the impacts of SHS on children's health

Children's contribution to fathers' awareness of SHS

From a limited number of fathers of children in the full intervention school who agreed to participate in the FGDs and IDIs, it could be construed that children made little contribution to their fathers' awareness on the adverse health effects of children's health. According to these fathers, television was the most common communication channel on smoking and SHS, followed by newspapers (among the fathers) and radio (among the mothers). During the last two months of 2011 and the first four months of 2012, explanation from their children was considered another communication channel on the issue of SHS. Apart from that, fathers also said that the participant information sheet sent to them by the school was also a source of information.

In the FGD with fathers who agreed to smoke outdoors on their children's request, it was perceived by all the fathers involved that their children were more aware of SHS impacts on children's health, and their children frequently explained at home about the harmful effects of SHS on children's health and tried to persuade them to smoke outdoors. This might imply that these fathers' understanding of the harmful effects of SHS on their children was likely to have improved. However, the results of the FGD showed that fathers' awareness of the issue was limited. They did recognise that smoking is not only harmful to the health of smokers but also negatively affects the health of non-smokers, including children. However, the majority of the fathers did not understand thoroughly all the impacts that SHS may have on their children's health. Coughing was mentioned by most fathers, and some admitted that the children's lungs were at risk when they were exposed to

SHS. However, fathers could not state any symptoms or diseases related to their children's lungs that might be caused by SHS.

> *According to me, the lungs of children are not fully completely developed. Therefore, when they have to inhale tobacco smoke, they will be adversely affected, especially in their lungs.* (FGD with fathers who smoked outdoors on their children's request, full intervention school).

Children's contribution to mothers' awareness of SHS

It was revealed from the FGD with mothers of children in the full intervention school that mothers' awareness on this issue was better than that of father's. All the mothers acknowledged that SHS could have adverse health effects on their children. Furthermore, they could describe what their children had practised at home during the intervention period regarding raising awareness of the harmful effects of SHS on children and were even able to name some symptoms, diseases and concepts including coughing; asthma, bronchitis, pneumonia, lung function deficit, middle ear disease, etc.

> *My daughter, she said to my husband that if he still smoked in the home, she and his brother could be suffered from cough, asthma, bronchitis, bla..bla… She also explained that tobacco smoke contains 7,000 toxins (smiled)* (FGD with children's mothers, full intervention school).

> *He [son] also said to my husband that it was very dangerous to his health if my husband kept smoking inside the house. Then he listed a lot of diseases that I could not remember all, but some like pneumonia, lower lung function, and middle ear disease* (FGD with children's mothers, full intervention school).

Interestingly, these mothers considered smoking as a cause of considerable economic loss, which was not perceived by the participating fathers.

> *I just calculate like this. My husband pays a lot of money for buying tobacco for his smoking. I said to him why don't convert it [tobacco] into money to buy gifts or cakes for our children* (FGD with children's mothers, full intervention school).

5.2.4 Children's contribution to changing their fathers' smoking place

As reported in Chapter 4, the percentage of fathers and other smokers who smoked inside the homes of children in the full intervention school decreased significantly from 83.0% pre-intervention to 59.8% post-intervention (Figure 4.3), while no significant changes were observed for the other two schools. This changed smoking pattern for the full intervention school might have led to the significant reduction of children's self-reported exposure to SHS at home, from 86.4% to 59.8% (Figure 4.5). No significant changes were recorded in respect to children's exposure to SHS

at home for the partial intervention and the control schools. The binary logistic regressions model also confirmed that children in the full intervention school reported a higher occurrence of non-exposure to SHS, and of fathers/other smokers smoking outdoors. These findings are convincing evidence showing children's capacity to act as change agents with regard to changing their fathers' smoking location from inside the home to outdoors.

From the children's perspective, it seems that children in Grade 3 believed they had more power to persuade their fathers to smoke outdoors than their counterparts in Grade 4 and Grade 5, although their awareness on the issue of SHS was lower. Although all children in the FGDs had tried to persuade their fathers and other adults in their families not to smoke in the home, not all of them succeeded, especially the first time. While almost all children in Grade 3 in the FGD reported that their fathers went outside to smoke when requested, only about two-thirds of children in Grade 4 and Grade 5 in their FGD considered themselves to be successful in persuading their fathers to go outside to smoke, although at home they all practised the skills learned in class. However, children who failed to persuade fathers not to smoke in the home left the places where people were smoking to avoid exposure to SHS. One child in Grade 3 also mentioned help from her mother, but this did not seem to be effective unless the mother was actually present when the father was smoking.

> *Whenever my father smoked, I said to him that I felt breathless. Then he went out to smoke.* (FGD with children in Grades 4 and 5, full intervention school).

> *My father [My father didn't go out to smoke]. He kept silent and still sat there to smoke. I advised him but he was still there so I left to go out. Next time I asked him, but he still smoked in the home, then I left ... I asked my mom and she talked to him, then he went out to smoke. But when I asked him not to smoke in the home [without my mother's presence], he still smoked inside.* (FGD with children in Grade 3, full intervention school).

Requests were repeated by successful children to sustain the situation of their fathers smoking outdoors. The reason for repeating requests was that even fathers who were willing to smoke outdoors on their children's request tended to forget and still smoked in the home on subsequent occasions. If their children did not keep repeating the requests, their fathers' improved behaviour of smoking outdoors would not be sustained. Children in Grade 3 who successfully persuaded their fathers reported that they continually reminded their fathers about smoking outdoors, and so did the successful children in Grade 4 and 5, while moving away was chosen by unsuccessful children if their fathers or other smokers ignored their persuasion.

> *Yes [Yes I kept reminding …], I said to him, Dad, can you please go outside to smoke, or otherwise I will get coughing, wheezing, pneumonia and middle ear disease [repeated the harmful effects of SHS].*

Then he said OK and he went outside to smoke, and next time he didn't smoke in the home. (FGD with children in Grade 3, full intervention school)

I said [persuade father not to smoke in the home] but my father didn't say a word. Next time I said but he still smoked indoors. So I left (Boy in Grade 5, FGD with children in Grades 4 and 5, full intervention school).

The percentages of children who reported success in persuading their fathers and other adults in their family not to smoke in the home are illustrated in Figure 5.3. Among the 264 children in the full intervention school who were living with smokers, there were 79 children in Grade 3, 93 in Grade 4, and 92 in Grade 5. Figure 5.3 shows that most children reported that their fathers had gone outside to smoke on their request (80.7%); the percentages by grade were 89.9% for Grade 3, 87.1% for Grade 4, and 66.3% for Grade 5. No significant difference was observed between children in Grade 3 and Grade 4, while a significantly lower percentage was recorded for children in Grade 5 ($p < 0.001$).

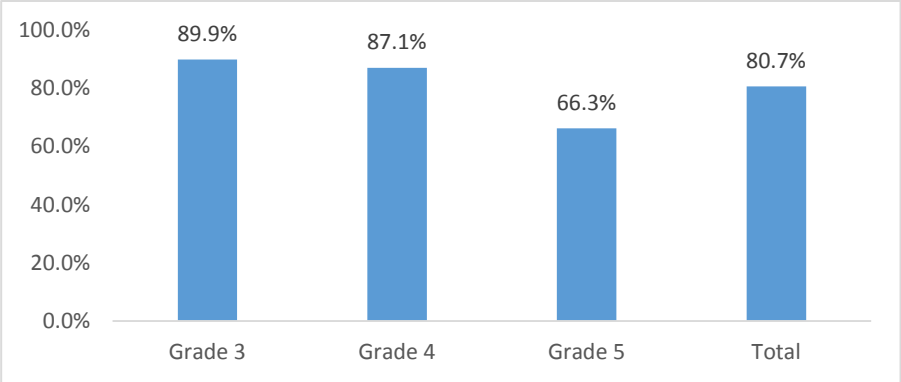


Figure 5.3 The percentage of children who successfully persuaded their fathers and other adults in the family not to smoke in the home by grade, full intervention school, post-intervention

Figure 5.4 shows the percentage of children by gender who reported their success in convincing their fathers and other smokers to smoke outdoors. It seems that girls had a greater capacity to persuade their fathers to go outside to smoke than boys (84.5% versus 77.0%); however, the difference was not significant ($p > 0.05$).

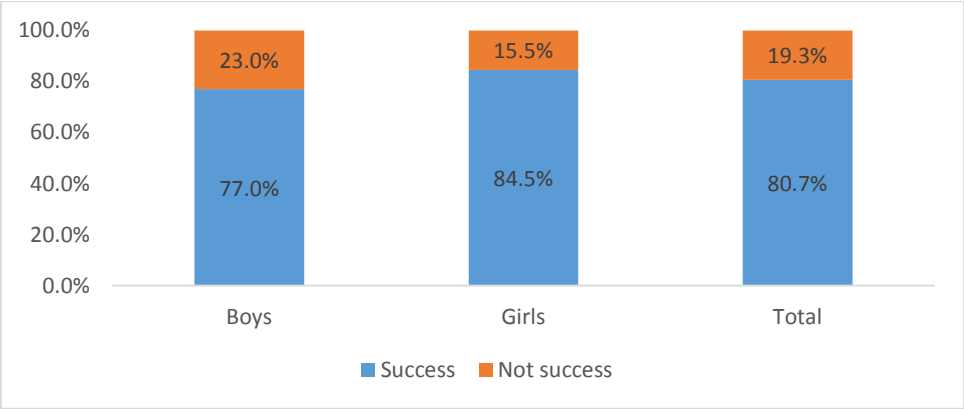


Figure 5.4 The percentage of children who reported success in persuading their fathers and other adults in the family not to smoke in the home by gender, full intervention school, post-intervention

5.3 Parents' perspective on children's capacity as change agents in changing their fathers' smoking pattern

Fathers and mothers of children from the full intervention school reported that their children had an improved capacity to explain the detrimental health effects of SHS on children's health, and to convince fathers and other smokers to go outside to smoke. Fathers showed their support for their children in the program by listening to children's explanations and responding to children's requests by going outside to smoke. Children not only shared information with their parents about the issue of SHS, they also shared with their friends, as reported in the FGD with smoker fathers in the full intervention school. An increased frequency of explanation about SHS and of children persuading their fathers was acknowledged by both fathers and mothers who participated in the FGDs. Both fathers and mothers confirmed that fathers received more requests from their children to go outside to smoke during the duration of the intervention program. All fathers and mothers participating in the FGDs confirmed their children's success in negotiating with fathers and others to smoke outdoors. Recognising that their children were more aware of the issue of SHS made parents happy because their children knew how to protect themselves from SHS exposure.

> *I don't know about the other kids. But my daughter, this year, she reminded me more frequently [to go outside to smoke]*. (FGD with fathers who smoked outdoors on their children's request, full intervention school).

> *She said to my husband that she learnt from school [about SHS and its harmful effects]. And she said that smoking causes lung cancer. She said that others sitting around my husband when he was smoking would be considered as passive smokers, and tobacco smoke was very harmful to their*

health. A lot … And she requested my husband stop smoking, or if he insisted on smoking, she asked him to go outside to smoke. (FGD with children' mothers, full intervention school).

For my daughter, I realised that she understood more clearly. Sometimes she and I sat together, she reminded me of smoking less, or when I started smoking, she left to avoid the smoke. And she reminded me to go outside to smoke. I saw her understanding more, and she reminded me more. She was concerned about me, reminded me many times. She was very active in persuading me. I am very pleased because she could increase her consciousness [knowledge] about this problem. When her friends came to see her, she also spoke to them about this. (FGD with fathers who smoked outdoors on their children's request, full intervention school).

He said a lot [explained about SHS and about requesting fathers to go outside to smoke]. And his father agreed with him and asked him to go away when he smoked. Or he went upstairs to the open air[6] *and smoked there.* (FGD with children's mothers, full intervention school).

According to parents, children's skills in negotiating with fathers about the issue of SHS and smoking places improved, and they were considered 'skilful' by fathers. For example, through cleverly appealing to fathers by relating the issue of SHS to younger siblings, the success of children was ensured. They also demonstrated that they were protecting their siblings.

My son gave me one picture. In the picture, family members are sitting together, and the father is smoking. The son said to the father if his father continues smoking like this, he and his younger sister will become ill. I asked my son who drew it, and he said he did. He did it because his school motivated all children to draw pictures about tobacco. At that time I was smoking [laughed loudly], but I understood why he gave me that picture and I stopped. He was … clever in this case … skilful, I think [laughed]. (FGD with fathers who smoked outdoors on their children's request, full intervention school).

He reminded my husband frequently. But sometimes my husband and his visitors smoked a lot in the living room. He [the son] just kept silent, but he held his younger sister by the hand and ran away. I knew that he didn't want his father to lose face because he reminded his father and the visitors not to smoke in the home, but at least I felt easy when my son now knows how to protect himself and his sister. (FGD with mothers, full intervention school).

5.4 Risks for children in negotiating with fathers about not smoking in the home

The study explored what children had witnessed about their father's feelings when they negotiated with their fathers about not smoking in the home and when they explained the harmful

[6] A typical house with several floors in Vietnam often has the top floor open to the air. This space is often used for drying washed clothes in the sun.

effects of SHS. The results are shown in Figure 5.5 and 5.6. As illustrated in Figure 5.5, of the 264 children living with smoker fathers or other smoker(s) and who tried to persuade them not to smoke in the home, 22.3% reported being scolded by their fathers and other smokers in the family. No significant differences between the children were recorded in regard to their grade at school ($p > 0.05$).

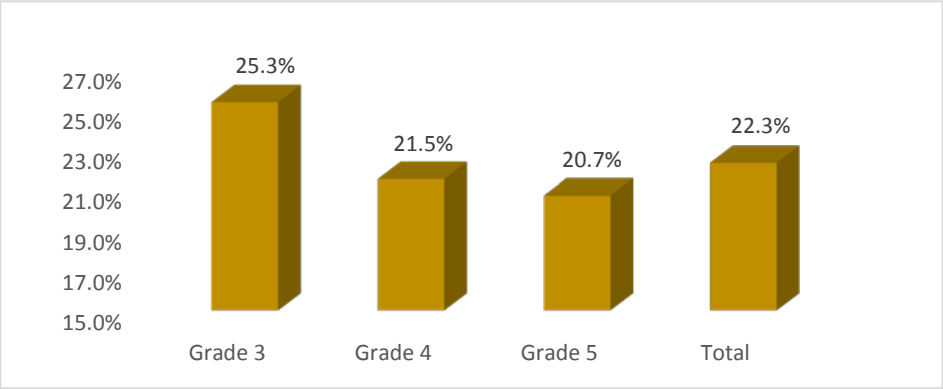


Figure 5.5 Percentage of children who were scolded by fathers when persuading them not to smoke in the home by grade, full intervention school, post-intervention

Figure 5.6 shows the proportion of children by gender who reported being scolded by their fathers and other smokers in their home. Nearly one-fourth of girls reported being scolded while one-fifth of boys were scolded; however, the difference was not significant ($p > 0.05$).

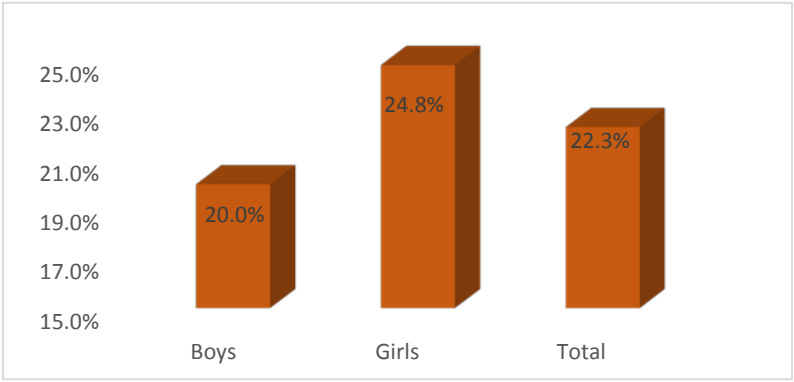


Figure 5.6 Percentage of children by gender who were scolded by fathers when persuading them not to smoke in the home, full intervention school, post-intervention

According to the FGD with fathers who went outdoors to smoke on the request of their children, there was a risk that children might be scolded by smokers, or even beaten by some aggressive fathers, but they confirmed that the situation was very unlikely. It might have happened in a case where a father was drunk and lost control, but they hoped that children might be aware of the risky situation and leave instead of trying to convince the drunk father.

I think it [aggressiveness from fathers] might happen with some drunk fathers, but it is very rare. And I think children when inhaling the alcohol, they should go away instead of talking to their fathers [about not to smoke in the home] (FGD with fathers who smoked outdoors on their children's request, full intervention school).

In contrast, as admitted by several mothers, some fathers were angry and shouted at their children when asked not to smoke in the home, especially at the beginning of the intervention program. However, mothers gave timely support to their children, and the children faced no risk of being beaten by fathers. From the results of the FGD, it appeared that if children made a request then got approval from their mothers, their requests to their father became more powerful and normally resulted in the father going outdoors to smoke.

At first, he [the smoking father] was very angry. He shouted at my daughter. When he got angry, I came to help her [the daughter], and to support her. And he stopped his anger when I and my daughter had the same opinion, and he went out to smoke. Recently, he has always gone out to smoke and when he finishes smoking, he comes in. He always smokes in the garden corner recently …. (FGD with children' mothers, full intervention school).

Figure 5.7 presents the percentage of children needed their mothers' help by grade when children persuaded their fathers and other smokers to smoke outdoors. Nearly half of the participating children in the full intervention school (47.0%) needed assistance from their mothers, although only just over one-fifth of them reported being scolded by their fathers. The study found no significant difference by grade, gender of children, and number of siblings they had in relation to the percentage of them needing for their mothers' help.

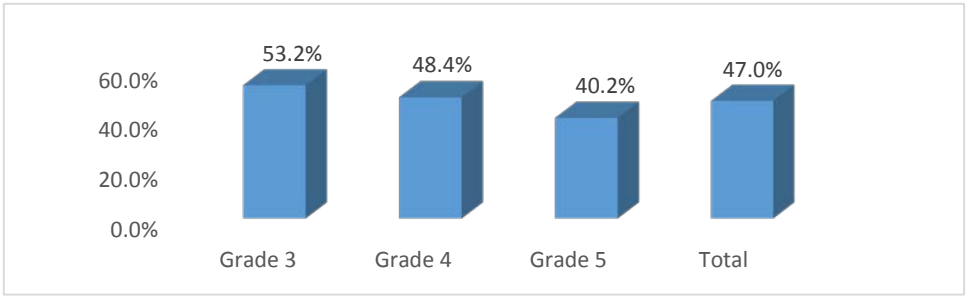


Figure 5.7 Percentage of children with mother's assistance by grade, full intervention school

An IDI was held with the father of a Grade 5 boy in the full intervention school who refused to go outside at home to smoke on his son's request. This father was a very heavy smoker; at the time of the interview, he smoked a water-pipe more than 20 times a day, and had been smoking for nearly 30 years, since the age of 18. At the beginning of his smoking life, he smoked cigarettes, but he turned to the water-pipe to save money. Although admitting that smoking was very harmful, he

often mentioned the negative impacts on the health of smokers rather than on children and other passive smokers. He confirmed the receipt of the participant information sheet from the school, but he would not go outside to smoke because he was a heavy smoker and preferred to stay inside the house to smoke. He affirmed that he would never go outside to smoke, and his son should leave instead, if the boy wanted to avoid SHS exposure. No real anger happened between him and his son, because his son did not dare to ask him to smoke outdoors, according to the father.

> *In general, my son … he doesn't dare to persuade me, or I would beat him. When he came back from school, he said to me that it was very harmful if I still smoked. I know … and I realise everything ... I know that it is very harmful … I often cough seriously and I have kicked the hubble-bubble [water-pipe] out of my house many times, but when the cough is over, I take it again to smoke. If he requested me [go outside to smoke], I would beat him. This is my house; he doesn't have the right to ask me to go out* (IDI with an angry father, full intervention school).

This father also suggested that children should not tell their fathers to go outside to smoke, because they would be considered as 'being rude' to adults. Children should stay outdoors or go away from the smoking to avoid SHS exposure at home.

> *Then they [children] should go out [to avoid exposing to SHS]. You should think for my case. If my son told me to smoke outdoors when I smoked, I would think that he was rude. If he didn't want to sit there when I smoked, he should go out. When I finished smoking, he then would come in. And in fact my son did that way at home. He never dares to ask me to go out to smoke* (IDI with an angry father, full intervention school).

The summary of his story and his son's wishes is presented in Box 5.2.

Box 5.2 Angry smoker father and his son: what did the boy think?*

Nam, an 11-year-old boy, was studying Grade 5 at a primary school in Chuong My district, Hanoi Capital city, Vietnam. He was taught every week at school about the harmful effects of SHS and how to prevent exposure to SHS. He was actively involved in other teaching–learning activities of the SHS teaching sessions, such as role-plays. He, in fact, had acted in several scenarios in class, but always acted as an angry father, refusing to act in any other roles in the scenarios, and always refusing to go outside to smoke when requested by children playing other roles in the scenarios.

At home, Nam's father was a very heavy smoker and had smoked cigarettes and water-pipes for nearly 30 years. His father never went outside to smoke. He often sat in the middle of the living room and smoked a water-pipe more than 20 times a day. Whenever Nam tried to talk to him about the harmful effects of smoking, he kept silent and looked at Nam angrily, so Nam could not tell him about what he learnt at school about the harmful effects of SHS on children's health and

could not try to persuade his father to smoke outdoors. He knew that if he told his father, his father would be very angry and could beat him. His mother was too busy with her own business to find money for the family and did not have time to help him. Therefore, he chose to keep silent and went out whenever his father smoked.

On the day the school organised a competition game and asked children to draw pictures on secondhand smoke and its harmful effects on children's health, Nam did not participate in the game but submitted a picture. In his picture, he drew a boy and a father who was smoking standing together, and the son was saying to his father '*Daddy, I am always getting a cough when you smoke. Could you stop smoking in the home*?' (Figure 5.8).

**The content in this box was based on an in-depth interview with a father who refused his son's request of smoking outdoors, and on a talk between the principal investigator and his son – an 11-year-old boy in Grade 5 in the full intervention school – after he participated in a children's focus group discussion. The name of the boy has been changed to ensure confidentiality.*

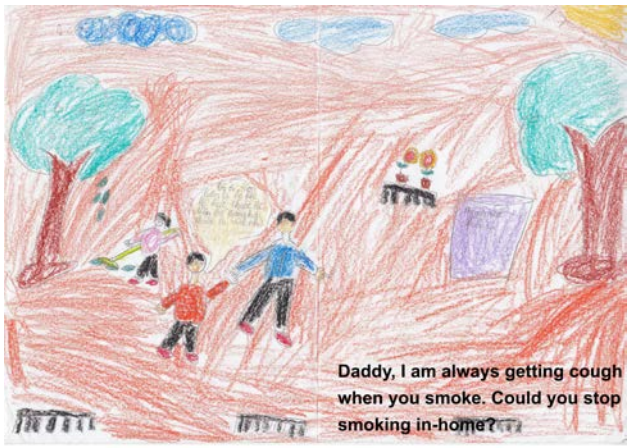


Figure 5.8 The picture by Nam about how he imagined persuading his father not to smoke in the home

5.5 Discussion

5.5.1 The confidence of children, parents and teachers in children's capacity as change agents

The qualitative and quantitative results in this chapter have shown that children in the full intervention school were confident in their capacity to successfully persuade their fathers and other smokers to go outside their home to smoke. This confidence among children could be explained by their improved awareness of the harmful effects of SHS on their health, and their consequent belief that they could explain to their fathers and other smokers in their homes the harmful effects of SHS.

They also trusted in themselves to successfully convince these smokers to smoke outdoors. Children's positive attitudes and their confidence in influencing their fathers and other smokers were also discovered in the pilot study in the same district by Huong et al. (2011), with almost all children participating in the pilot study believing that they could persuade their fathers and other smokers in their family to smoke outdoors if they were provided enough information and knowledge on the detrimental health effects of SHS. Other studies have also found that children believed in their capacity to influence others, including adults, in health promotion programs (Mwanga et al., 2007). Children's high confidence in various intervention programs where they were used as change agents was also indicated in the smoke-free home interventions in Pakistan (Siddiqi et al., 2010) and in England (Alwan et al., 2011). Other public health intervention programs also indicated children's positive attitudes to their roles in the programs, such as dengue prevention in Puerto Rico (Winch et al., 2002), and hand-washing with soap in Vietnam (Xuan et al., 2013).

Results of the current study showed that the high confidence among primary school children in the full intervention school was supported by the confidence of their parents and teachers that their pupils/their children could persuade adult smokers not to smoke in the home. Such results were similar to those of a study in Tanzania, where parents and teachers also believed in the roles of children as health change agents (Mwanga et al., 2007). The result was comparable to the results of the pilot study in the same district in 2010, where teachers were also confident that the skills in making requests and offers that children were taught in the subject Ethics in Grade 2, Grade 3 and Grade 4 would contribute to their ability in persuading adults not to smoke in the home (Huong et al., 2011). In this present study, children's knowledge of the harmful effects of SHS on their health was much better during and after the intervention, and hence their attitudes and practices on the avoidance of SHS exposure and on persuading adults not to smoke in the home were enhanced. As reported by the teachers, their pupils were well prepared through various scenarios on different situations that might happen at home, and their skills in explanation and persuasion were practised in role-plays of the scenarios in class. They were also prepared to make the proper responses when they communicated, and made requests or offers to their parents at home through the practices of the SHS curriculum and in the subject Ethics in Grades 1, 2, 3 and 4 (Thuy, 2013, Thuy et al., 2010a, Thuy et al., 2010c, Thuy et al., 2010d).

A review of the subject Ethics in Grade 1 showed that primary school children were taught how to behave properly in different contexts, with the subject content mainly being pictures and short texts appropriate for young children (Thuy, 2013). The skills in interacting with other people, such as making requests and giving offers, were mentioned in the subject Ethics in Grade 2 (Thuy et al., 2010d), and were also repeated in the subject in Grade 3 at a higher level (Thuy et al., 2010c). In

Grade 4, children were taught about the expression of ideas to peers, to teachers and to parents, relatives at home and to other adults in the community (Thuy et al., 2010a). Respecting other people in the community, such as teachers, friends, peers, women and adults, was part of the content in Ethics in Grade 5 (Thuy et al., 2010b).

With these skills in making requests and giving offers, in interacting appropriately with different people from different age groups, and the teaching program of the SHS in the intervention for the current study, teachers were confident that their pupils could be successful as change agents in persuading their fathers and other smokers in their family not to smoke in the home.

The results presented in this chapter also show the important role of teachers in informing children about SHS, including teaching about SHS in class, designing scenarios, applying active teaching–learning methods, and sharing information on the activities children did at home to influence their father's smoking place. The results were consistent with a study conducted by Xuan et al. (2013), where teachers were considered to be important in helping children gain better knowledge about hand-washing with soap (HWWS) and better skills in communicating health messages related to HWWS to their siblings and their parents.

Parents of children in this current study also showed their support for the intervention program, and this support was a stimulating factor for their children to develop their ability as health-promoting actors (Christensen, 2004).

5.5.2 Children as agents of change in influencing their father's smoking pattern

While research and studies on recruiting children as change agents in various public health areas have been conducted and published, such as on hand-washing (Xuan et al., 2013, Onyango-Ouma et al., 2005), hygiene and environmental sanitation (Olayiwole et al., 2003, Onyango-Ouma et al., 2005), diarrhoea (Rohde and Sadjimin, 1980), trachoma (Dickman and Melek, 2013), dengue prevention and control (Winch et al., 2002), and malaria prevention and control (Ayi et al., 2010, Nonaka et al., 2008), not many studies approach the use of children as change agents in tobacco control, such as reducing SHS exposure or stopping the use of tobacco. Several studies on the concept of the 'Smoke-free Home', however, have also focused on children as one group of actors in the intervention program, with the purpose of reducing children's and non-smokers' exposure to SHS, and these studies achieved a certain success, such as decreasing the number of 'regular' or 'persistent' in-home smokers, and reducing the prevalence of children's exposure to SHS (Siddiqi et al., 2010, Alwan et al., 2011, Hai et al., 2006, Precioso et al., 2010). It has also been suggested that children are likely to apply healthy behaviours that they learn at school into their daily lives without any enforcement (Greenberg et al., 2003). Therefore, the concept of 'children as change agents' in

this current study, with the main aim to reduce children's exposure to SHS at home from their parents' smoking, contributing to meeting the current public health priority of 'reducing children's exposure to SHS' (US DHHS, 2006), and children encouraging their parents to smoke outdoors, was seen as potentially effective, as suggested by Ding et al. (2010) .

As previously discussed in this chapter, children in this current study showed a high level of confidence in their capacity to persuade their parents to smoke outdoors, and they were supported by their teachers and their parents. The findings of the previous chapter also revealed that the percentage of fathers and other adult smokers at the full intervention school who went outside to smoke after the intervention had increased significantly (Figure 4.3), which resulted in the sharp decrease in children's self-reported exposure to SHS at home post-intervention (Figure 4.5). These findings were similar to the findings of an evaluation of a school-based intervention program in the United States of America (USA) using children as change agents to modify the nutrition intake of their parents. The USA study showed that children were the major agents who influenced their parents' participation and their parents' behavioural changes in eating more healthy food (Davis et al., 2002). The fact that children, by their own practices, can change the behaviour of their family members to protect and maintain their health has also been researched and confirmed in studies such as educating family members about trachoma and taking azithromycin to combat trachoma in Ethiopia (Dickman and Melek, 2013), promoting improved hygiene practices among peers, household members and community in water and environmental sanitation in Nigeria (Olayiwole et al., 2003), and influencing parents in establishing hand-washing facilities or boiling or filtering water before use in Kenya (Onyango-Ouma et al., 2005).

Girls had higher confidence than boys in their influence on their fathers to change their smoking pattern from indoors to outdoors (Figure 5.2). However, girls and boys reported a similar prevalence in successfully persuading their fathers/other smokers to smoke outdoors (Figure 5.4). This finding was similar to results presented in Table 4.8 and 4.9 that the gender of children was not associated with greater improvement in reducing children's exposure to SHS at home, and also was not associated with the degree of change of fathers' smoking patterns (to smoke outdoors), . This finding was similar to that of some other studies, where gender showed no associations with SHS exposure (Ding et al., 2010).

Although children in the current study seemed to play little role in helping their fathers to increase their awareness of the harmful effects of SHS, their roles in influencing fathers and other smokers to smoke outdoors could not be denied. Both fathers and mothers who participated in the FGDs of the study recognised the influential capacity of children, including clever persuasive skills,

in explaining the harmful effects of SHS to family members and in convincing fathers or other smokers in the family to smoke outdoors. Figure 4.3 shows the sharp reduction in fathers smoking in the home after children in the full intervention school had participated in the intervention.

Children's role as change agents in this current study, changing fathers' and other adults' behaviour so that they smoke outdoors, was supported by themselves, by their teachers and their parents, which was also indicated in the pilot study (Huong et al., 2011). In general, as shown in many studies, parents do support their children's roles as change agents who could contribute to promoting healthy behaviours or better health (Winch et al., 2002, Alwan et al., 2011, Siddiqi et al., 2010, Xuan et al., 2013, Olayiwole et al., 2003, Onyango-Ouma et al., 2005, Pridmore, 2003, Muzaki, 2011). The support from parents is considered to be important in encouraging children to be 'health promoting actors' in different interventions (Christensen, 2004).

5.5.3 Risks to children in negotiating with fathers and other smokers

The literature shows that primary school children have stated their anxiety when first required to discuss a health issue with their parents at home, with fear of being criticised by parents, and this fear was justified at the beginning of an intervention study on tuberculosis in Zambia. However, post-intervention, their anxiety disappeared and was replaced by a confidence that they could communicate health messages effectively to their family members and communities (Bond et al., 2010). To become effective agents of change, children's knowledge on the relevant topic should be enhanced properly to minimise any possible criticisms from their family members regarding the health message provided by the children (Onyango-Ouma et al., 2005, Nonaka et al., 2008, Ayi et al., 2010).

Children in this current study did report that they had experienced criticism and aggression from fathers who smoke or other smokers in their homes, and this experience was confirmed by their mothers; however, the fathers who agreed to participate in the FGD for the study considered this risk to be very unlikely. To minimise such risks to children, the involvement of mothers had been suggested by parents who participated in the pilot study in the Chuong My district, where the current intervention program was undertaken (Huong et al., 2011). This suggestion was appropriate, as children were likely to discuss issues with their mothers rather than their fathers, and their mothers could help to pass their messages to their fathers (Mitchell et al., 2009).

The results of the current study showed that the prevalence of children in the full intervention school who reported being scolded by their fathers or other smokers was more than one-fifth (22.3%) and there were no significant difference between grades and genders (Figure 5.5 and Figure 5.6). None of the children reported being beaten by their fathers or other smokers in

their family. Not all smokers who became angry with children's persuasions kept smoking in the home, as reported by mothers in their FGD.

In the few cases where fathers refused to smoke outdoors, children in the full intervention school practised the action of leaving the smokers to avoid SHS; this was considered an effective way of reducing their exposure to SHS, as suggested by Ding et al. (2010). Even though they failed in persuading fathers/other smokers to smoke outdoors, these children still wished these smokers to smoke outdoors, as shown in the pictures they drew.

The results of this study (Table 4.5 and Figure 4.7) show that children in the full intervention school had significantly better knowledge on the issue of SHS and its detrimental health effects than their counterparts in the partial intervention and the control schools, which could assist them in effectively explaining the harmful effects of SHS and in negotiating with fathers and other smokers in their homes to smoke outdoors, as suggested by other studies (Onyango-Ouma et al., 2005, Nonaka et al., 2008, Ayi et al., 2010). This might explain how children in the full intervention school, although reported to be scolded or criticised by fathers/other smokers (22.3%), were successful in persuading their fathers/other smokers to smoke outdoors, leading to a sharp reduction in smokers who still smoke in the home at the conclusion of the intervention (Figure 4.3).

One of the limitations of this study is that the results of children's success in negotiating with their fathers/other smokers to go outdoor to smoke were based on the participant children's responses and no quantitative questions were used in relation to their parent's observations. However, the children's success was validated by the results gained from focus group discussions with parents, children and teachers after the intervention. The qualitative results revealed that parents perceived that their children's explanations were acceptable and resulted in no familial conflict, and smokers were willing to smoke outdoor.

Role of mothers as protective agents for children

In terms of adverse responses to the children from the smoking relative, the results of the qualitative component of this study showed that except for a single reported case from a mother that her husband felt angry towards his child by the child requesting him to go outdoor to smoke, none of fathers felt 'irritated' or 'annoyed' when being asked to go out to smoke by their children. The angry father, after listening to further explanation from the mother, agreed to go out to smoke and he maintained the outdoor smoking behaviour.

Nearly half the children in the full intervention school who lived with smokers reported that they had asked for their mothers' help (47.0%) during their explanation and convincing of smokers

at home (Figure 5.7). The study results also revealed that none of children's mothers smoked (Section 4.4 and Table 4.4). Therefore, instead of having to negotiate with both parents, children in this intervention program only had to persuade their fathers. The support from mothers seemed to be effective in assisting children in their persuasion of fathers or other smokers not to smoke in the home, as reflected in the FGDs with children and with their mothers post-intervention. Many fathers, after becoming angry with their children, eventually went outdoors to smoke as the result of their children's persuasion with the assistance of the mothers.

During the focus group discussion with mothers of children in the full intervention school, it was revealed that the participation of mothers in the intervention program did not result in the negative feeling from fathers. In fact, it was shown that with the mother's involvement in the intervention program, the effectiveness of children's negotiation with their fathers seemed to be increased. This finding was relevant to those of the pilot study conducted in 2010 where the participants suggested the involvement of mothers as protective agents for children in case they had to face their fathers' anger (Huong et al, 2011).

5.6 Summary

This chapter has demonstrated the capacity of children in the intervention program as successful change agents with regard to altering their father's smoking pattern, from in the home to outdoors.

Firstly, children believed in their capacity as change agents in persuading their fathers and other smokers in their family, based on what they had learnt and practised from school about SHS and about persuading their fathers not to smoke in the home. Various scenarios and role-plays were developed for the practical section of the teaching. The discussion and sharing on the topic and on the real situation at home with peers were encouraged by teachers to help children generate appropriate solutions for different situations that might happen at home. The results presented in this chapter reveal that 87.9% of all participating children in the full intervention school believed that they could successfully convince their fathers and other family members not to smoke in the home.

Children were considered by their parents and their teachers to be successful in convincing fathers to go outdoors to smoke. Some children used clever ways of negotiating with their fathers which were supported by the fathers. In fact, 80.7% of children living with smoker(s) in the full intervention school reported success in persuading their fathers and other smokers to go outside to smoke.

There was a risk that children might be scolded by aggressive fathers, although it was very unlikely. To minimise this risk, children asked for help from their mothers (47.0%), and mothers showed their support in protecting their children

The results of this chapter indicated that the last hypothesis of the study ‘After the intervention, the children’s capacity to persuade adults not to smoke inside the home will be confirmed’ was accepted.

Chapter 6 'Children Say No to Secondhand Smoke' – Implementing the Intervention Model

6.1 Introduction

The previous chapters have explored children's exposure to secondhand smoke (SHS), their knowledge, attitudes and practices (KAP) in relation to SHS, their avoidance of exposure to SHS, and their capacity as change agents in an intervention program designed to change the behaviour of fathers who smoke so that they smoke outdoors instead of inside the home.

The results presented in Chapter 4 and Chapter 5 established that, for children at the full intervention school, the percentage of children reported their fathers and other smokers smoking in the home and the proportion of children reported to be exposed to SHS at home significantly decreased at the end of the intervention, while no significant changes occurred for the other two schools. Children in the full intervention school showed convincing improvements in knowledge, attitudes and practices after the intervention, and an ability to persuade adults not to smoke in the home, compared to children in the other two schools. The binary logistics regression models confirmed these results. In addition to these quantitative results, children in the full intervention program were also considered by teachers, by parents, and by themselves to be good at communicating the harmful effects of tobacco smoke to their fathers, and to be effective change agents in convincing fathers and other smokers in their family not to smoke in the home (Chapter 5).

This chapter will present the trial intervention program 'Children Say No to Secondhand Smoke' in a school-based setting that was implemented in the full intervention school during the academic year 2011–2012. Suggestions from different informants about improvement of the program will also be presented; these were mainly on the curriculum, teaching contents and methods, allocation of time, and the age when children should start the program.

6.2 Introduction to the trial intervention program ‘Children Say No to Secondhand Smoke’

In compliance with the government resolution that the primary education program is under the management of the Department of Education and Training (DoET) at district level (The Government of Vietnam's Portal, 2011), the three primary schools in the study are managed and guided by the DoET of the Chuong My district. The principal investigator contacted the Chuong My district DoET to seek their approval and permission to approach the three selected primary schools in the district to undertake the study. Subsequently, permission was given by the Head of the Chuong My DoET on 9 September 2010 (Appendix 3). The Quang Bi Primary School was chosen randomly as the full intervention school from the three selected schools. The remaining two schools were randomly allocated the status of ‘partial intervention school’ (Tot Dong Primary School) and ‘control school’ (Trung Hoa Primary School).

With the approval of the study by the Head of the district DoET, the Division of Primary Education of the department allowed the principal investigator (PI) to monitor the activities of the program at all three primary schools, with emphasis on the full intervention school. A representative staff member of the division and the PI informed the three selected schools of the plan for data collection during the academic year 2011–2012. In addition, that staff attended various discussion meetings about the intervention program between the PI and teachers at the full intervention school, and were involved in the supervision of the program during the intervention. Teaching content, teaching program and teaching methods were also discussed during these meetings in order to revise and improve them so that they were appropriate to the local context and to the understanding of children of primary school age. The intervention materials were developed in the period from June to October 2011.

The key players involved in the intervention program are shown in Figure 6.1.

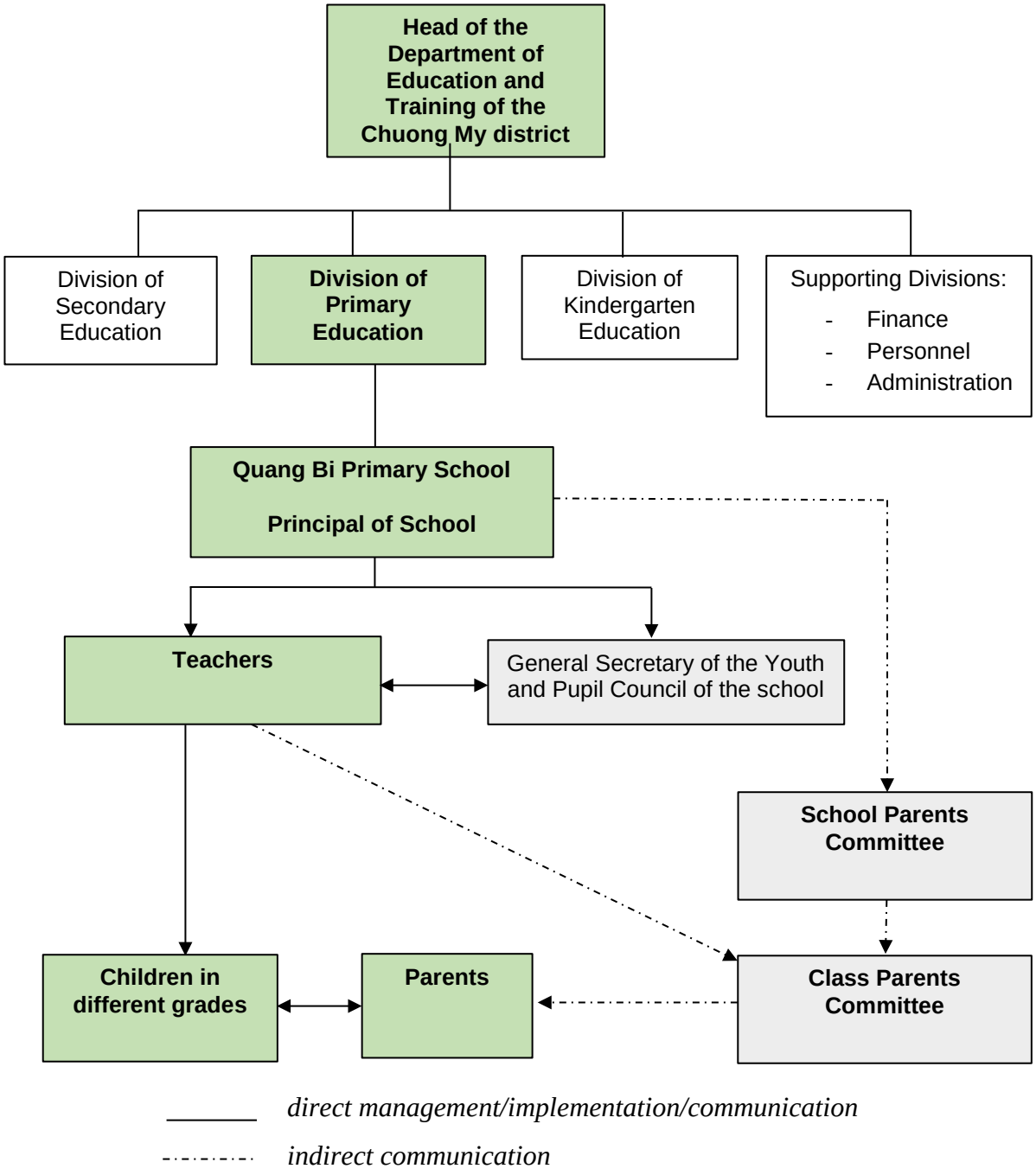


Figure 6.1 Stakeholders in the trial intervention program 'Children Say No to Secondhand Smoke'

The structure within Figure 6.1 fits within the theoretical framework of the study presented in Chapter 3 (Methodology, Figure 3.1), as adapted from various different studies (Alwan et al., 2011, Bowen et al., 2007, Christensen, 2004, Winch et al., 2002, Rohde and Sadjimin, 1980, Xuan et al., 2013, Onyango-Ouma et al., 2005). Teachers provided children in class with information on the harmful effects of smoking and on communication with and persuasion of fathers who smoke. In addition, as presented in Chapter 5, children were also required by teachers to discuss the program with their peers. At home, children were encouraged by their teacher to explain to their

parents about the harmful effects of SHS and attempted to persuade fathers and other adult smokers in the family to smoke outdoors.

6.2.1 The Chuong My District Department of Education and Training

The most senior government official involved in the trial program was the head of the DoET in the Chuong My district (Figure 6.1). The department was responsible for approving the intervention program and directing the involvement of the Quang Bi Primary School in the program in cooperation with the PI. The department was also responsible for monitoring and supervising all activities implemented at the school. A requirement by the Head of the Department was that the teaching content on the harmful effects of tobacco and SHS in the intervention program had to be undertaken in the afternoon session, and the school had to ensure that the intervention program would not affect the time allocated to the standard curriculum as regulated by the Ministry of Education and Training (MoET). The Division of Primary Education was assigned by the Head of the Department to monitor and supervise all activities of the intervention program. The monitoring and supervision was undertaken once a month in combination with the PI, with reports forwarded to the Head of the Department after each monthly supervisory visit.

Apart from managing primary education (through the Division of Primary Education), the DoET is also responsible for managing kindergarten and secondary education in the district, as shown in Figure 6.1.

6.2.2 Quang Bi Primary School

The second level within the delivery of the trial program was the school, and the designated staff from the Division of Primary Education of the DoET was the interconnector between the school and the district DoET. The participants within the school community were teachers, primary school children, and the children's parents. An additional role in the model was filled by the General Secretary of the Youth and Pupil Union of the school, who actively contributed to the game competition and the drawing competition for primary school children in March 2012. At Quang Bi Primary School, the Principal of the School acted as the leader of the intervention program and she was responsible for calling meetings between teachers, the General Secretary of the Youth and Pupils Union of the school, and the PI to discuss and comment on the intervention materials and their appropriateness to the understanding of pupils in the locality. In addition, the school, through the Principal of the School and using the participant information sheet, advised parents of the trial intervention program to be implemented in the school during the 2011–2012 school year. Information on the intervention program was given to parents at the beginning of the school year

during parent–teacher meetings, which resulted in almost all parents being aware of the intervention at the start of the school year, as verified from the qualitative data.

6.2.3 Teachers at the full intervention school

Together with the children, teachers were the main actors in the intervention program. On a weekly basis, the classroom teachers utilised the training packages and the posters developed by the research team to teach the children about the harmful effects of SHS, avoidance of SHS, and how to attempt to persuade their fathers and other relatives not to smoke in the home. The classroom teachers were required by the Principal of the School to employ active teaching and learning methods in the intervention program. Both theoretical and practical sessions (the latter mainly role-plays) were used, and the children showed their interest in learning and participating in role-play activities. Role-play scenarios were developed by teachers based on their own experiences, and on discussions with children about how they managed the issues of SHS exposure and avoidance at home and how they attempted to persuade adults to smoke outdoors. The scenarios were discussed among the teachers and revised on the basis of advice and comments from other teachers. Teachers frequently used question and answer sessions in their teaching sessions and assigned children into different roles through role plays in various scenarios. They also encouraged their pupils to practise explaining the harmful effects of SHS and persuading their fathers and other adults to smoke outdoors. Teachers also encouraged children sharing experiences with their peers and their teachers in class.

The anniversary of the establishment of the Vietnamese Youth Union (26 March each year) is an important event in school life in Vietnam. As part of the celebration of this event at Quang Bi Primary School in 2012, the General Secretary of the Youth and Pupil Council at the school, under the guidance of the Principal of the School and in conjunction with the intervention program, launched a competition for children, focusing on the harmful effects of SHS and on how to persuade fathers and other adult smokers not to smoke in the home. Voluntary participation by representatives from Grades 3, 4 and 5 was sought. In addition, the Principal of the School and the General Secretary launched a drawing competition on the general topic of ‘Smoking/Tobacco Smoke and Your Health’. The Division of Primary Education of the district DoET was informed about these activities approved by the Principal of the School. The designated staff from this division also attended the Youth Union Day anniversary ceremony.

In total, 50 children voluntarily registered with the Youth and Pupil Council to represent their classes and to participate in the competition game. Two hundred and thirty pictures were selected from the different classes in the school to be sent to the Youth and Pupil Council. Of these,

three pictures were selected to receive an award during the Youth Union Day anniversary ceremony (Appendix 9). The anniversary ceremony and the competition game were held in the school playground with all non-participating children in the audience.

The children who participated in the competition game were assigned to different teams (mixed-age groups of six to seven children per team), and each team was given a red flag to be used during the competition. The competition was divided into two rounds. In the first round, the participating teams received questions verbally from the master of ceremonies. The time allocated for the preparation of each answer was 30 seconds, and the team chosen to answer the question was the first who raised the red flag. If the answer was wrong, the process was conducted again with the remaining teams. The three teams with highest score were chosen to participate in the second round. In this round, a panel of three teachers (one from each grade) gave each team a scenario about exposure to SHS that could happen in their homes. The teams were given 10 minutes to prepare for the roles. The panel judged the teams' role-plays and awarded a first, second and third prize.

6.2.4 Children and their parents

While the school parents committee and the class parents committees did not have roles in the intervention program, they were kept informed about the program by the school and by the class teachers, so as to ensure their continuing support.

Children were the key participants in this trial intervention program and their cooperation was essential for the success of the program. In the home, children had to explain the harmful effects of SHS to their fathers and other smokers living with them, and then had to attempt to convince these smokers to smoke outdoors. The results presented in Chapter 5 indicated that, with the lessons learnt at school and the skills practised through role-plays in various scenarios in class, almost all the children in the full intervention program believed that they could be successful in negotiating the issue of SHS exposure and smoking outdoors with smokers in their family (87.9%). Four-fifths (80.5%) of children who lived with smoker(s) reported their success in persuading smokers in their families to smoke outdoors. Their capacity as change agents was highly appreciated and confirmed by their parents and their teachers. As discussed in Chapter 4, the proportion of children in the full intervention school who reported that their fathers or other smokers smoked in the home decreased significantly, while almost no changes occurred in the smoking habits of fathers and other smokers in the homes of children in the other two schools. Similarly, the proportion of children in the full intervention school who reported exposure to SHS at home also declined significantly.

Children did have to face the possible risks of being criticised or scolded by their fathers or other smokers at home. The study results revealed that around one-fifth of children who lived with smokers reported that they were criticised or scolded by their smoker fathers or other smokers (Chapter 5). However, mothers' involvement in the intervention minimised such risks for children.

In conclusion, the intervention program was evaluated by all participants to be successful, and this success was confirmed by the quantitative and qualitative data obtained from the study. The program, in fact, has an opportunity to be expanded into all other primary schools in the district, as a result of a commitment made by the Head of the Department of Education and Training of the Chuong My district in his in-depth interview.

> *For the harmful effects of tobacco smoke, we considered that primary school children would have the most powerful influences on smokers in their family. Therefore, we totally agreed when receiving this proposal to implement the intervention program [the SHS intervention] in the primary school program. In addition, for this trial intervention, we agreed with the team to choose Quang Bi Primary School as the intervention school. This is not the best but not the worst primary school of the district, and after the intervention we can consider the strength and the weakness of the program and the experiences in implementing the intervention in order to expand the program into the whole district. If we can see the effectiveness of this trial program, we will expand it into all remaining 38 primary schools in the district.* (Head, Department of Education and Training, Chuong My district).

6.3 Suggestions for improving the intervention model

The intervention program, as evaluated by different participants, was considered successful in protecting children from exposure to SHS at home, as confirmed by quantitative and qualitative data. After the intervention, children's knowledge, attitudes and practices had improved significantly. Their capacity as change agents in the home was also enhanced. Many of their fathers or other adult smokers sharing the house with them chose to smoke outdoors as a result of their requests. This success as change agents resulted in the significant reduction of children's self-reported exposure to SHS at home after the intervention. Teachers and parents also perceived that the increased awareness of SHS among children would reduce their susceptibility to taking up smoking when they became older.

Input on the delivery and effectiveness of the trial intervention program was sought from various stakeholders and interested parties, including teachers, children, children's parents/guardians, the principal of the full intervention school, and the Head of the district DoET. Various comments were obtained, focusing on the appropriate ages of children that the intervention

should initially target, the integration of the program into the official primary education curriculum, and the time allocated for delivery of the program. Teachers and their managers raised the need for additional in-service training for teachers, and the need for materials on SHS so that they could better deliver the proposed program in class.

6.3.1 Suggestions for implementing the program throughout all primary schools from Grade 1

The trial intervention program conducted from November 2011 to April 2012 in the full intervention school involved children in Grade 3 to Grade 5 only (i.e. children 8 to 11 years old). The selection of the age range was based on information in the reviewed literature that children aged 8 and older had better language development, and a greater ability to focus their attention, and hence could contribute more effectively than younger children in delivering an intervention program to adults (Borgers et al., 2000). This was confirmed in an intervention program with children of primary school age in the north-west region of Vietnam, where children in Grade 4 could communicate information about hygiene to their parents and their siblings, while this task seemed impossible for children in Grade 1 (Xuan et al., 2013). A study in the Lao People's Democratic Republic (PDR) using children as change agents in malaria prevention and control also recruited only primary school children in Grades 3, 4 and 5 into their study (Nonaka et al., 2008). However, the key stakeholders and respondents in the present study were not in agreement with the above assertion in relation to the age of children capable of participation. All respondents thought that the intervention program should begin at Grade 1 and continue through Grade 5. These age groups are considered to have a powerful influence on adults' smoking behaviours, as indicated in a study in a province in the Red River Delta of Vietnam (Trang et al., 2006), and as again confirmed by the study respondents.

> *In fact, our Department of Education and Training [of the district] is managing three education levels in the district: kindergarten education, primary and secondary education. In these three levels, I think children at the primary school age have the most powerful influence [on smoking behaviours of adults], because children in the kindergartens are too young; therefore they can't show their responses accordingly even though they dislike the smell of tobacco smoke. For those in secondary school, they are older, hence they normally think and act how they want to. They might avoid exposure to SHS, but their responses to adults might be limited. On the other hand, children at primary school age are still very innocent, and they can discuss with parents and adults some issues that older children can't … Therefore, I think that the most powerful group is children of primary school age, and their parents are closer to them than the older children. Hence they will have immense power over smokers* (Head, Department of Education and Training of the Chuong My district).

I think we should involve children from when they start studying Grade 1. Of course their skills in explaining and negotiation will not be as good as those in Grades 4 or 5, but at least they can understand that SHS is very harmful to their health and they can stay away from SHS. That means they can protect themselves. If they can't explain or persuade their smoker fathers, they can realise that they should go away (FGD with teachers, full intervention school).

The key study informants felt that the integration of the intervention program content across the whole of the primary curriculum would assist children to understand the importance of avoiding exposure to SHS, and would enhance their knowledge and skills in protecting themselves from the harmful effects of SHS. As suggested by the study informants, the teaching of issues around exposure to SHS to children in Grade 1 and 2 should focus only on assisting them to realise that SHS is harmful to their health and they should avoid exposure to SHS at home and elsewhere. Any emphasis on requiring children at these young ages to explain the harmful effects of SHS and to persuade fathers and other smokers not to smoke in the home is unrealistic, because they might be incapable of conducting such actions. This opinion of the current study's informants was similar to the results found by Xuan et al. (2013) where children in Grade 1 could maintain their own hygiene practices after being taught at school, but were unable to communicate information about hygiene and hand-washing issues to their siblings and their parents.

I think children in Grade 1 and 2 just need to know that tobacco smoke is harmful to their health, that's enough. They don't need to know in detail how many toxins tobacco smoke contains, what the toxins are, or the toxicity of those toxins. They just need to know that it is harmful and can cause some respiratory diseases in children. For example, coughing is very easy to understand. And we advise them to leave when someone smokes around them. I think that's enough for them. (FGD with teachers, full intervention school).

Parents also shared the view that the program should start with children in Grade 1 and 2 instead of with children in Grade 3 to Grade 5 as in the trial intervention program.

According to me, when they start going to school, children can understand many things. Although their understanding is not comprehensive, at least they realise the issue. Since Grade 1, I think they know what is bad, what is good. Of course it is not as thorough as adults' [understanding], but their thinking is opened and they can realise the good things and the bad things … (FGD with mothers, full intervention school).

They are very young, but they can understand and ask us to stop [stop smoking or stop smoking in the home]. Why don't we, as adults, listen to them? Of course we care for them then … of course … I even think that I can quit smoking if my young daughter can realise that (laughed) … (FGD with fathers who smoked outdoors on their children's request, full intervention school).

Children who participated in the study also thought that participation should start from the age of six (i.e. from Grade 1). Children in Grades 4 and 5 not only suggested the involvement of children in Grades 1 and 2, but also suggested that the program could be expanded to other locations. Children in Grade 3 shared the same view as children in Grades 4 and 5, but could not express in detail how and why the program should be broadened to younger children and to other locations.

> *Miss, I think that teachers should teach [the SHS] to children in Grade 1 and 2, because there are a lot of pictures in that program [the intervention]… and it provided enough information for them, and I think … [smile] I think younger children will find it easier when convincing parents and grandparents. If you [the principal investigator] can enlarge it [the intervention] to other schools, more people will know about the harmful effects of SHS.* (FGD with children, Grade 4 and 5, full intervention school).

6.3.2 Suggested modifications of the teaching program

The content in the intervention program on SHS taught at the full intervention school for children in Grades 3 to 5 consisted of two separate sections. The first section was 'Secondhand smoke and its harmful effects on children's health' and the second was 'How to help children in persuading their parents not to smoke in the home'. Each section was subdivided into different small sections. Teachers were required to teach each of the small sections in a 30-minute lesson. These lessons included a review of the previous lesson, the new content, and a brief summary at the end of the lesson.

Modifications of the materials for younger children

Suggestions were made on how to modify the intervention materials to be more relevant to the cognitive level of children in Grades 1 and 2. Teachers' opinions were that simple information would be sufficient for these children to learn to avoid places where people are smoking, both in the home and elsewhere. However, both teachers and the Principal of the School believed it to be inappropriate to require these young children to understand the composition of SHS, to explain the harmful effects of SHS to smokers, and to convince smokers not to smoke indoors or in front of children. Additionally, teachers thought that pictures should outweigh text in materials explaining the hazards of SHS, as visual images have a greater impact than text on younger children. From Grade 3, however, children can follow the materials as designed and used in the intervention.

> *If we can implement this program to children from when they are studying Grade 1 and 2, then different material should be designed for children at these ages. Pictures should outweigh texts. Then I think it will be suitable and effective. Because at these young ages, children have different ways of seeing things and are often familiar with the form of 'learning fun and fun that is learning'. This will*

> *be effective for them … And if they know that SHS is harmful to their health, they will stay away from smokers. If they don't know, they will think that smoking is harmless and stay there with smokers. Because of that, I think this program should start with children from Grade 1.* (Principal, full intervention school).

In relation to the scenarios that help children to develop their negotiation skills from Grade 3 to Grade 5, it was suggested by the teachers that the complexity of scenarios and the role-plays should be increased by grade, because children at the older age could be capable in dealing with the more complex scenarios. However, as suggested by the teachers, the materials on SHS, the importance of avoiding SHS exposure, and convincing smokers to smoke outdoors could be the same for all children in Grades 3, 4 and 5.

> *According to me, children in Grades 4 and 5, especially children in Grade 5, will have better persuasive skills than children in Grade 3. With these older children, we need to have more complicated scenarios so that they can practise in class. They can apply their skills that they already have to practise communication and the persuasion [of fathers not to smoke in the home] in various complex situations that might occur at their home. For theory part, I think it is ok with the present material [the material provided by the intervention] for all of them* (FGD with teachers, full intervention school).

Re-formatting the training materials on SHS

Teachers had no comments or suggestions on the content of the intervention material and thought that it was suitable for teaching children in Grades 3, 4 and 5. However, they did propose changing the way that the material was delivered. They suggested that the content should be divided into 30-minute lesson plans, each starting with specific objectives. These changes would make teaching the content easier, especially for children in Grade 3.

> *That means our program has two sections: the first section is on the harmful effects of SHS; the second section is on negotiation. For example, in the first section, you [the principal investigator] should divide it into different small sections, and they are numbered. Each section lasts for one or two class hours, with specific learning objectives. Then it is easier for us to teach and is easier for pupils to remember and to understand.* (FGD with teachers, full intervention school).

Suggestions about time allocation

The Ministry of Education and Training of Vietnam (2011) allows principals of primary schools to develop teaching and learning plans for their own schools in which there are two teaching sessions each day (morning and afternoon). In the afternoon session, teachers are allowed to teach elective subjects, organise extracurricular activities, or organise learning clubs, etc. In primary schools in urban areas and in regions with advantageous economic and social development

conditions, extracurricular activities, extra education activities, clubs etc. are flexibly delivered and depend on the needs and capacity of pupils (MOET, 2011). In the full intervention school of this current study, the Head of the DoET required the principal of the school to run the SHS program in the afternoon session.

In relation to the time allocated for each lesson and the whole program on SHS, participating teachers gave some valuable suggestions. Because the teaching of SHS in the intervention program is not included in the official primary education curriculum, teachers suggested that the program should be integrated into the teaching of extra educational activities in the afternoon, when teachers could arrange time to teach the content of the SHS program and organise role-plays for the children to practise convincing and/or persuading smokers to smoke outdoors.

According to teachers, due to the relatively small amount of content for the SHS intervention program, the frequency of teaching the program (both theory and practice) could be once a month. Instead of teaching the content intensively over 6 months, as in the intervention program, the teaching could extend over 9 months during the entire school year. In addition, the program should be implemented for every year of children's whole primary school life, from grade 1 to grade 5, not in only one academic year like the current intervention program. In the following years of the primary education program, teachers should repeat main contents of the harmful effects of SHS in class and continue involving children in various role plays so as to maintain and to enhance their awareness on SHS and their capacity in persuading adults to smoke outdoors. This could also help to protect children from taking up smoking when they are older.

As well as the time allocated to the formal teaching of the SHS program, additional activities, such as practice of negotiation skills, could be integrated with other extracurricular activities, such as the regular class meeting every Friday. Teachers could also use extracurricular time to develop competitions for the children in the class and in the school such as games or drawing pictures, composing slogans or poems on SHS, based on their understanding of SHS and how to persuade adults not to smoke in the home. Such activities would increase the motivation of the children to more fully understand the issues around exposure to and avoidance of SHS.

> *This content [the SHS content in the teachers' handbook] consists of only two sections [harmful effects of SHS and the negotiation skills]; therefore I think it is difficult to consider it as an individual subject. I think it should be integrated into extracurricular activities like games or pictures, or poems etc. in the afternoon section. In fact, we have one hour per week for discussing different issues in class, which means four hours per month. We can use one hour per month for teaching this content, and we teach it throughout 9 months instead of 6 months as we did in this program* (FGD with teachers, full intervention school).

We should teach the contents [SHS and negotiation skills] again in every year, not in only one year like this [the trial intervention]. Teaching the content [SHS and negotiation skills] in this academic year, then next year we will repeat the main issues for them, and continue asking them to practise in role plays [in persuading smokers not to smoke in the home] in class. Therefore they can remember and can continue persuading their fathers. If we implement it [the program] in only one year and not repeat again, they will soon forget everything (FGD with teachers, full intervention school).

We should teach them [children] regularly, every year from Grade 1 through Grade 5. Because their fathers smoke daily, therefore I think we should teach them and repeat to them every year. And when they become more aware of it [SHS harmful effects], they will be able say no to smoking when they become adults (FGD with teachers, full intervention school).

Suggested class size

According to teachers in the full intervention school, the teaching of the SHS intervention program required the application of the active teaching-learning method. Hence the number of children in each class should be around 25, and a maximum of 40, to teach the program with optimal effectiveness. With a limited number of children per class, teachers can assign them into groups to discuss SHS and to do role-plays. Large classes would make it difficult for teachers to deliver this program.

I think that the program was appropriate in our school, because we have around 25 to 35 students per class, and only a few classes have a maximum 40 students. With a small number of students like that, it is easier for us to divide them into groups and into role-plays. We can supervise all the activities during their study, not only in this program [the intervention study] but also in teaching other subjects. To tell you the truth, I am not sure if you could implement this program in other primary schools in the city [the urban area of Hanoi], where each class could have approximately 60 to 65 students. How can a teacher manage a large number of students and assign them to do the tasks required by the program? Impossible, I think. (FGD with teachers, full intervention school)

6.3.3 Additional requirements of the school and parents

As part of the SHS intervention program, all the Grade 3, 4 and 5 teachers were invited to participate in a training workshop on the harmful effects of SHS, the techniques of persuasion, and the respective teaching methods for these. Both theoretical and practical considerations (the latter mainly through role-plays in class) were presented to the participating teachers.

In order to expand the program into other primary schools and to increase its effectiveness, further suggestions, including potential requirements, were made by the participants in the intervention program. From the teachers' and managers' (Head of DoET of the district, Principal of the School) point of view, it would be necessary for teachers to attend training sessions on the

harmful effects of SHS and on how to teach children to persuade adults not to smoke in the home and in front of children. A one- or two-day in-service training course would be appropriate for teachers at primary schools to acquire all the necessary information that they need to provide to their pupils. Such training courses should be organized by the district DoET.

> *In order to expand the program, the most important thing, according to me, is training for teachers. The program with such information, if we want it to have high effectiveness, especially when running it with a young age of primary school children and to help them to understand the issue and to take the right actions to protect themselves, will require necessary skills from teachers to teach to children. Therefore, I think the training is the most important*. (IDI, Head, Department of Education and Training, Chuong My district).

Training materials, such as posters, leaflets, and teaching packages for teachers, are also required by the district DoET to meet the expectation of expanding the intervention to different primary schools in the district.

> *For materials, it is of course necessary. The teaching materials, as I understand, are included in the intervention program and are the tools that teachers can use to teach their pupils. For the training aid equipment, I think it depends on each school's conditions. Our primary schools are equipped with communication equipment. Even modern teaching aid equipment is available* (IDI, Head, Department of Education and Training, Chuong My district).

> *According to me, we need support from the intervention in terms of training materials, posters, leaflets that we can use during the teaching program. The teachers have the responsibilities to make the pupils understand about the harmful effects [of SHS], and the teachers' roles and responsibilities are to help children to share the issue with their parents and their communities* (IDI, Principal, full intervention school).

Parents expect to receive more information on SHS and its harmful effects on children's health and on other non-smokers. SHS information for parents would increase the efficacy of the intervention program and would help parents better understand the adverse effects of SHS on children's health, which should result in a higher rate of smoking outdoors. Information for parents might be in the form of leaflets, flyers or brochures that could be given to children to take home. Also in addition to the A1 size posters in used in the intervention in classrooms, larger size posters to be hung in the school's playground were suggested by the parents to help children become more aware of the harmful effects of SHS.

> *This tobacco program, I think it [the intervention] should have two additional large size posters to be hung in the playground of the school, then our children could see it everywhere, in the class and in the playground. That's the first thing. The second thing is the leaflets delivered to children to bring home. When they bring the leaflets back home, their parents can have a look at the leaflets. Then it [the*

leaflet] can help parents to understand the problem. Some parents, with the understanding, can do it [smoke outdoors] by themselves. And children can post the leaflet on the wall that is most convenient for them. If they like to post it in the living room, for example, then their parents, their relatives, their grandparents can see it [the leaflet] accidentally and they can realise the harmful effects that SHS is harmful to their children's health. That is the combination [in addition to children's explanation and persuasion] (FGD with fathers who smoked outdoors, full intervention school).

Teachers also acknowledged that there would be an increased workload for them if the program were integrated into the afternoon session of the primary education program. Planning for teaching the program and designing scenarios were considered to be time-consuming by the teachers. However, when considering the benefit that the intervention could provide to the younger generation in protecting them from the detrimental health effects of SHS, all the teachers who participated in the FGD showed their willingness and commitment to participate in the program if required by the school and the district DoET; and this was also found to be the case in the pilot study of this intervention undertaken in 2010 (Huong et al., 2011). According to the teachers, the program would contribute to better smoking habits in the community, and reduce SHS exposure for children, thus reducing SHS-related illness among children in the community.

Of course it is wrong if we said that implementing the program [teaching of SHS content in the primary school] would have no increased workload on us. The preparation of the teaching content was time-consuming, but not much, and if the workload is put on the scale against the benefits of the program, we can realise that the benefits of the program far outweigh [the extra workload]. Furthermore, the training package is clear and brief; then we can easily use it in our teaching. We just need to prepare and develop suitable scenarios. If we can help children to protect themselves from the harmful effects of tobacco smoke, we are willing to, and the workload you [the principal investigator] mentioned is nothing (FGD, teachers in the full intervention school).

According to me, there is nothing to be called 'workload', because all of our teachers understood the importance of the intervention and they were willing to run the program, and nothing meant constraint or compulsoriness here (IDI, Principal, full intervention school).

6.4 Plan for expansion of the intervention program

According to the regulation of the MoET and Ministry of Internal Affairs (The Government of Vietnam's Portal, 2011), the district Department of Education and Training is responsible for managing kindergarten, primary and secondary education in the district. Therefore, the district DoET has the authority to run any extracurricular educational activities in the schools under its management as long as there are no changes to the standardised curricula regulated by the MoET.

The intervention program was implemented in only one primary school of the Chuong My district, and was considered successful by all study informants. Quantitative and qualitative data obtained from the study also indicated the success of the intervention. As the district Head of the DoET promised to expand the program into all other primary schools of the Chuong My district, the participants in the full intervention program of the current study should share their experiences in implementing the program (e.g. advantages and disadvantages, methods of teaching-learning, methods of seeking the participation and involvement of children's parents in the program). The district DoET should play a principal role in directing and monitoring activities of the program, and should seek technical support from researchers/experts in the tobacco control area. The training for teachers could be implemented with the technical help of the research team from the current study.

The experiences to share, according to the principal of the full intervention school, included the information of the intervention program sent to parents of children through the PIS to call for their support for the intervention program and for mothers' support if children face risks while persuading their fathers or other adult smokers not to smoke in the home. In addition to regular teaching and learning of SHS in class, games or other activities such as drawing pictures on the topic of SHS harmful effects should be organised so as to encourage children be motivated in participating other activities. To sustain the program, teachers should maintain role plays in class in every teaching section to enhance children's capacity in persuading smokers to smoke outdoors.

> *In order to implement this program and expand it [expand the program into other primary schools in the district], as our school did, we sent the information of the program [the participant information sheet] to all children's parents. Then, during the meeting between the school and all parents in the beginning of the school year, we also informed them about the program [the intervention program]. We asked them to support for their children, of course they promised us that they would support their children. I also think that the organization of the game on 26 March 2012 [the game on SHS organised in the full intervention school] like what we did was very important in motivating our students to participate in the program. We also encouraged them to draw pictures on the issue of SHS and negotiation skills, and we realised that our students were very much interested in this activity. And, the most important thing, as I realised, was the regular teaching and role play in class, where children were involved in various roles in different contexts they might face at home. These all together, were the main things that contributed to the success of this program* (IDI, principal, full intervention school).

Teachers of the full intervention school shared the same view with their principal. Additionally, they considered sharing experiences on the situations children faced at home with peers in class and discussing the issues with teachers also helped children to identify most appropriate solutions to negotiate with smokers in their family. The encouragement of children to

practise what they learnt at school about SHS at home was also considered the experiences that the full intervention schools should share to other primary schools in the district.

> *To make them understand the issue [the harmful effects of SHS to children's health] is not difficult. But we need to ask them practise regularly through role plays, and we also need to ask them to practise at home. And another experience is to ask them share their experience in persuading their fathers not to smoke inside the home with their classmates and with us* (FGD with teachers, full intervention school).

Regarding the expansion of the program into other areas, it is suggested by the Head of the district DoET that the program should be implemented in his own district for one academic year. If the program is successful, the district DoET then will introduce it to the provincial DoET (pointing out challenges, requirement for inputs, etc.) for their consideration of expanding the program. The provincial DoET should be aware that preventing children from exposure to SHS will contribute to reducing the burden of SHS-related diseases among children, and children's susceptibility to take up smoking when they become older.

> *In fact I think there is a possibility to expand it [the SHS teaching program] into other districts. However, I think initially it would be implemented in Chuong My district. Then we would have experiences in implementing it and report it to the Provincial DoET. The Provincial DoET will consider and decide if they agree to expand it to other districts* (IDI, Head, Department of Education and Training, Chuong My district).

Funding for implementing the SHS training at primary schools could be sought from the national tobacco control fund (see Articles 28, 29 and 30 of the Law on Tobacco Control (The National Assembly of Vietnam, 2012).

Chapter 7 General Discussion and Conclusions

7.1 Objectives of the study

The primary general aim of this study was to provide a mechanism for creating a home environment free from secondhand smoke (SHS) for children; this was done by using primary school children aged 8 to 11 as change agents to reduce in-home smoking by their fathers and hence reduce their exposure to SHS at home.

The specific aims of the study were to:

1. explore children's self-reported exposure to SHS at home pre- and post-intervention
2. evaluate the pre- and post-intervention knowledge, attitudes and practices (KAP) of children aged from 8 to 11 years in relation to the harmful effects of SHS and the prevention of SHS exposure
3. assess the capacity of children to persuade adults not to smoke indoors in their own homes after the intervention
4. implement the intervention model 'Children Say No to Secondhand Smoke' in a district in the North of Vietnam and make suggestions for its improvement

7.2 Children's self-reported exposure to secondhand smoke at home

Many intervention programs on tobacco control have shown a decreased prevalence of children's exposure to SHS at home after the intervention, irrespective of their locations and time (Alwan et al., 2011, Siddiqi et al., 2010, Precioso et al., 2010, Nga and Ha, 2007, Hai et al., 2006).

The intervention reported in this thesis was a school-based intervention program. The advantages of school-based interventions include access to a large number of children, among whom concepts and ideas can be exchanged that may facilitate the implementation of an intervention program (Bowen et al., 2007). The intervention also received support from the Head of the district Department of Education and Training (DoET) and from teachers, parents and primary school children, as shown in the study results and as indicated in the pilot study in 2010 (Huong et al., 2011).

The study results (Chapter 4) showed that, among the children who reported to live with smokers, the percentage at the full intervention school who reported their exposure to SHS at home significantly decreased from 86.4% pre-intervention to 59.8% (Figure 4.5) post-intervention, while almost no changes occurred in the partial intervention and the control schools. The children in this study also reported that the prevalence of fathers or other smokers in the family who smoked in the home significantly declined from 83.0% pre-intervention to 59.8% post-intervention (Figure 4.3), while no significant differences were observed in the partial intervention and the control schools. This decline would have contributed to the 26.6% reduction in the children's reported exposure to SHS at home for children in the full intervention school.

The World Health Organization (WHO) has found that the main environment where children are exposed to SHS is at home (WHO, 2009). Hence, decreasing the prevalence of adults smoking in the home could substantially decrease children's exposure to SHS. The fact that the children in the partial intervention school failed to report any significant decline in the prevalence of smoking by adults in the home indicates that materials provided to these parents (consent forms and a participant information sheet) had little influence. Parents in the full intervention school received the same printed material, but their children experienced the full intervention (Chapter 6). The significant changes in smoking prevalence in the home reported by these children is suggested to be a result of their improved knowledge, attitudes and practices (KAP) in relation to SHS, and their ability to influence smokers and to persuade them to smoke outdoors.

This suggested connection has been validated through various binary logistic regression models on children's reduced exposure to SHS at home (Chapter 4, Section 4.8, Tables 4.8 and 4.9). Children in the full intervention school reported a greater reduction in SHS exposure at home than their counterparts in the partial intervention school, and particularly the control school. The improved attitudes and practices of children in the full intervention school significantly contributed to the improved reduction in their exposure to SHS at home (Table 4.8). Table 4.9 shows that the children in the full intervention school reported a significantly higher prevalence of smokers (fathers or other adult smokers in their family) smoking outdoors rather than indoors. In the regression model summarised in Table 4.9, the only factor that contributed to the change of fathers' smoking place was "school". This could be implied that children in the full intervention school had contributed greatly to the reduction in the proportion of in-home smokers after the intervention.

Comparing the results of this current study with those of other intervention programs aiming at reducing SHS exposure among children, it is seen that a decrease in smoking inside the home and in self-reported exposure to SHS by children was also observed in a study in Portugal, which

similarly collected data through a self-administered questionnaire completed by primary school children in their classroom settings (Precioso et al., 2010). Other intervention programs which aimed at creating a home environment free from SHS for children also revealed that, after the intervention, the prevalence of smokers smoking inside the home and of children's exposure to SHS at home decreased significantly (Alwan et al., 2011, Siddiqi et al., 2010, Hai et al., 2006, Nga and Ha, 2007). However, these intervention studies sought information from adults, while the current study and the Portuguese study collected data from primary school children. In addition, this current study could only collect information from children, similar to the Portuguese study (Precioso et al., 2010). Due to a shortage of financial and human resources, the current study could not collect information from adults as done in other interventions (Alwan et al., 2011, Siddiqi et al., 2010, Hai et al., 2006, Nga and Ha, 2007), nor could it test recruited children for a biomarker of SHS exposure, such as urinary cotinine, as done by Hai, Ngoc et al. (2006) (or cotinine in saliva, plasma, hair, etc.) to validate children's reported exposure to SHS. The current study was also unable to collect quantitative data from children's parents. However, it did collect qualitative data from parents through focus group discussions (FGDs) and in-depth interviews (IDIs).

In conclusion, the study's first and second hypotheses 'After the intervention, the exposure of children to SHS will decreased significantly' and 'After the intervention, parents of children will significantly change their smoking pattern from inside the home to outdoors' have been confirmed, with a significant decrease in children's self-reported exposure to SHS at home, and the significantly lower prevalence of fathers and other smokers still smoking in the home after the intervention.

7.3 Children's knowledge, attitudes and practices related to SHS

The study showed that children's knowledge on the harmful effects of SHS, and their attitudes and their reported practices on the avoidance of SHS exposure improved significantly at all three selected schools, even though children in the partial intervention and the control schools were not exposed to the intervention program. The standard primary education curriculum in Vietnam, which has two subjects on tobacco control in Grade 3 as part of the subject Nature and Society (Nga et al., 2010b) and in Grade 5 in the subject Sciences (Nga and Thai, 2009a), could have contributed partly to the improvement of children's KAP. However, children in the full intervention school showed both significantly higher mean scores for KAP and for achieving the 'good' levels of KAP compared to their counterparts in the partial intervention and the control schools (Chapter 4, Sections 4.6 and 4.7). The results in Table 4.5 and Figure 4.7 indicate that children in the full

intervention school showed a significantly higher mean score for knowledge and a significantly higher prevalence of a 'good' level of knowledge than their counterparts in the other two schools. Similar trends were also found for attitudes (Table 4.6 and Figure 4.8) and practices (Table 4.7 and Figure 4.9) of children in relation to the avoidance of SHS.

Binary logistic regression models (Tables 4.10 to 4.12) indicate that children in the full intervention school had significantly better knowledge on SHS and better attitudes and practices on the avoidance of SHS exposure (post- vs pre-intervention) than those in the partial intervention and the control schools. The results also revealed that children's better attitudes and better practices were positively associated with the occurrence of non-exposed/remained non-exposed to SHS of children at home (Table 4.8). Therefore, it can be inferred from this study that the intervention program contributed markedly to the improvement in children's knowledge on the harmful effects of SHS and their attitudes and practices on the avoidance of SHS.

The results of this current intervention study complement those of various other intervention programs around the world. Many public health intervention programs aiming to increase awareness and improve attitudes and practices in their study populations showed similar success. Examples included better children's KAP in diarrhoea prevention in Indonesia (Rohde and Sadjimin, 1980), in dengue fever prevention (Winch et al., 2002), in hygiene and hand-washing in Kenya (Onyango-Ouma et al., 2005), in water and environmental sanitation in Nigeria (Olayiwole et al., 2003) and Uganda (Muzaki, 2011), in malaria control in the Lao PDR (Nonaka et al., 2008) and Ghana (Ayi et al., 2010), and in trachoma prevention and control in Ethiopia (Dickman and Melek, 2013).

To conclude, the third hypothesis of the study 'After the intervention, children's KAP on SHS will have improved significantly' was successfully confirmed. Children in the full intervention school showed a significant increase in both mean score and 'good levels' of KAP on SHS.

7.4 Children's capacity as change agents

Evidence on the role of children as change agents influencing adults and other community members to practise better health behaviours has been recorded in various intervention studies: for example, in studies of diarrhoea prevention in Indonesia (Rohde and Sadjimin, 1980), diarrhoea and vaccine-preventable diseases in India (Mukhopadhyay and Bhatnagar, 2005), dengue fever in Puerto Rico (Winch et al., 2002), water and environmental sanitation in Nigeria (Olayiwole et al.,

2003) and Uganda (Muzaki, 2011), hand-washing in Kenya (Onyango-Ouma et al., 2005) and Vietnam (Xuan et al., 2013), malaria prevention and control in the Lao People's Democratic Republic (PDR) (Nonaka et al., 2008) and Ghana (Ayi et al., 2010), and trachoma prevention and control in Ethiopia (Dickman and Melek, 2013).

The results presented in Chapter 5 indicated that children in the full intervention school, after acquiring knowledge, attitudes and practices on SHS through lessons taught by teachers at school and through their involvement in role-plays in class, were successful in their roles as change agents to persuade fathers and other smokers to smoke outdoors. Children, teachers and parents all showed a high level of confidence in the capacity of children to act as change agents in relation to SHS. This high level of confidence was similar to that found in the study of Siddiqi et al. on smoke-free homes in Pakistan (2010). Similar results in other public health studies also indicated the positive attitudes and commitment of children in undertaking tasks that they were required to do in public health intervention programs (Winch et al., 2002, Xuan et al., 2013, Nonaka et al., 2008).

The high confidence levels mentioned above were based on thorough preparation. Children in the full intervention school developed their skills in persuading smokers by participating in competition games and drawing pictures on the harmful effects of smoking and tobacco smoke, and by participating in role-plays of different scenarios related to the smoking habits of smokers at home. In classroom settings with the help of teachers, they were required to identify solutions to solve different scenarios that they might face at home. On the basis of their own experience and of discussions with children on what the children practised at home, the teachers developed different scenarios for children to practise in class after theoretical sessions. Their role in the intervention program was important in helping children to acquire better knowledge, attitudes and practices on SHS issues. The important roles of teachers in such interventions were also confirmed in other studies, such as on malaria prevention and control in Ghana (Ayi et al., 2010) and hand-washing with soap in Vietnam (Xuan et al., 2013).

In addition, the teaching and learning of healthy practices at primary schools in Vietnam in the subject Ethics from Grade 1 to Grade 5 (Thuy, 2013, Thuy et al., 2010a, Thuy et al., 2010b, Thuy et al., 2010c, Thuy et al., 2010d) provide children with various skills, such as making a request or giving an offer; interacting with peers, teachers and adults; and interacting with parents or siblings. Teachers involved in this study believed that these complementary skills could effectively assist children in the full intervention school in explaining the harmful effects of SHS to family at home, as well in persuading their fathers and other smokers not to smoke in the home. In fact, children were perceived by their parents to use 'clever' approaches to explain the harmful

effects of SHS on their health and to persuade their fathers not to smoke in the home, such as showing pictures that they drew about the harmful effects of SHS on children's health (Chapter 5, Section 5.3).

Results from the FGD with fathers of children in the full intervention school of the current study at the post-intervention showed that children seemed to have little role in improving their fathers' knowledge of the harmful effects of SHS on children's health. However, children's influence on changing their fathers' smoking place from indoors to outdoors was visible, with 80.7% of children who lived with smokers in the full intervention school indicating their success in persuading their fathers and other smokers in their family not to smoke in the home (Figures 5.3 and 5.4). Responses to the self-administered questionnaire by children in the full intervention school also revealed that the prevalence of fathers/other smokers who smoked in the home decreased sharply from 83.0% pre-intervention to 59.8% post-intervention (Figure 4.3), which resulted in significantly reducing children's exposure to SHS from 86.4% pre-intervention to 59.8% post-intervention (Figure 4.5). The increased occurrence of smoking outdoors among fathers and other smokers living in the same house with children was reconfirmed by children's parents in the FGDs conducted at the conclusion of the intervention.

Although many children succeeded in persuading their fathers and other smokers in their family not to smoke in the home, there was a risk that children could be scolded or criticised by the smokers. No children in the full intervention school reported being beaten by their fathers or other smokers in the home during or after trying to persuade them to smoke outdoors; however, 22.3% of children who lived with smokers reported being scolded by the smokers in their households when they tried to persuade the smokers not to smoke in the home (Figures 5.5 and 5.6). Nearly half of the children living with smokers asked for their mother's help as a means of minimising the aggressiveness that might have been displayed by their fathers (Table 5.7). Involving the mothers in this way was suggested in the pilot study preceding this current study (Huong et al., 2011). The current study revealed that none of children's mothers smoked; therefore, they could totally support and assist their children to avoid any risks that might occur as a result of their fathers' behaviour. In addition, children had to persuade only their fathers instead of both parents.

Other studies have shown that children's improved knowledge, attitudes and practices would effectively contribute to minimising the potential to be scolded or criticised by family members or others regarding the health messages communicated by children (Bond et al., 2010, Onyango-Ouma et al., 2005, Nonaka et al., 2008, Ayi et al., 2010). The improved knowledge, attitudes and practices of children in the full intervention school might have contributed to their success in persuading their

fathers and other smokers not to smoke in the home and to minimising their risks of being criticised or scolded. Among the group of children in the full intervention school who failed to persuade their fathers or other smokers to smoke outdoors, moving away from the SHS was an alternative option, and this was also considered an effective way of reducing their exposure to SHS (Ding et al., 2010).

In conclusion, the final hypothesis of the study 'After the intervention, the children's capacity to persuade adults not to smoke inside the home will be confirmed' was confirmed. Children showed their capacity as change agents in persuading their fathers and other smokers in their families to smoke outdoors.

7.5 The trial intervention program "Children say no to secondhand smoke"

The trial intervention program was a school-based intervention entitled 'Children Say No to Secondhand Smoke'. The intervention was implemented in the Quang Bi Primary School over a six-month period. With the approval from the Chuong My district DoET, the intervention program was undertaken with monthly supervisory visits from a staff member of the DoET (Division of Primary Education) and the principal investigator.

The actors involved in the intervention program included the Chuong My district DoET (Head of the Department) and one division of the DoET (Division of Primary Education), the Quang Bi Primary School, its teachers, children and children's parents (Figure 6.1). The program also included the School Parents Committee and the Class Parents Committee, which received information from the school about the intervention program (through the PIS that the intervention program sent to parents).

The main intervention activities run in the full intervention school included training for teachers on the harmful effects of SHS and on techniques of persuasion, as well as the relevant teaching methods. With a handbook delivered by the intervention programs and two A1 size posters (one on the harmful effects of SHS on children's health and one on several typical ways of persuading smokers not to smoke in the home), teachers delivered the content in class in the afternoon session. The active teaching-learning method was employed by all teachers of Grades 3, 4 and 5 for the full intervention program. Questions and answers and role-plays were used during the teaching of the SHS program; children were very interested in the role-plays, as indicated in the FGDs with teachers and with children. Teachers and children were considered the key actors of the intervention program: teachers were the deliverers of SHS content and children were the receivers

of the information. This approach of the intervention program was in line with other such programs using children as change agents (Rohde and Sadjimin, 1980, Winch et al., 2002, Xuan et al., 2013, Onyango-Ouma et al., 2005, Nonaka et al., 2008). In addition to the teaching-learning of the SHS intervention program in the afternoon session, a competition game and a drawing competition on SHS were also organised by the General Secretary of the Youth and Pupil Council of the school; 50 children participated voluntarily in the game, and almost all children in the drawing competition. The competition game was organised on the anniversary of the establishment of the Vietnamese Youth Union (26 March 2012). Games and picture drawing have been used in other intervention programs recruiting children as change agents. Examples include interventions on hand-washing and hygiene in Kenya (Onyango-Ouma et al., 2005), hand-washing in China (Bowen et al., 2007), and malaria prevention and control in the Lao PDR (Nonaka et al., 2008) and in Ghana (Ayi et al., 2010).

Suggestions for improvement of the intervention program were sought from the different informants in the study (teachers, children, parents, Head of the full intervention school and Head of the district DoET). The expansion of the program to all grades in the primary school education program was proposed by all the different respondents participating in the FGDs and IDIs. Modifications of the training materials on SHS were also suggested, with more pictures and less text for children in Grades 1 and 2, and no requirement for children in Grades 1 and 2 to persuade adults not to smoke in the home: these younger children would just be taught to realise that SHS exposure is harmful to their health and they should avoid SHS. The SHS training materials also needed to be reformatted into small lessons, each starting with training objectives. Another suggestion by parents was that additional posters be hung in the playground of the school, and leaflets/flyers about the harmful effects of SHS be provided for children to bring home. As suggested by teachers, such program fit with schools having small class size, with the number of primary school children ranging from 25 to 40 per class. In order to expand the program into other primary schools in the district, it would be necessary to provide training materials for teachers, as well as in-service training on SHS and on the techniques of teaching children how to persuade smokers not to smoke in the home and share experience of the full intervention program in implementing the trial intervention program to other primary schools in the district. It was also required that the district DoET would act the principal role in managing all the activities of the program and seek for technical help from tobacco control experts.

7.6 Limitations of the study

The current study has some limitations. Firstly, the study was conducted in only one rural district of Hanoi (Chuong My district) and this district was neither representative of Hanoi City nor representative of all rural areas in Vietnam. The district was chosen because it had no previously known intervention on tobacco control. The selection of the three communes was based on criteria set by the intervention protocol.

Secondly, the study could only collect data from primary school children through a self-administered questionnaire (SAQ) in their classroom setting. Due to a shortage of financial and human resources, no questionnaires (administered in a face-to-face interview or self-administered) were completed by parents, and nor were any observations made of the occurrence of smoking and in-home smoking in the locality. Hence, the background information provided by the children, and information on living with smokers and the exposure of children to SHS at home as well as the smoking locations of their fathers or other smokers sharing the house with them were not confirmed by their parents or by observational checklists. To overcome this limitation, the study invited parents of children to attend FGDs and IDIs at the conclusion of the intervention for clarification of information about the occurrence of smoking in the community and at home, and the activities that children had implemented at home during the intervention. FGDs with teachers were also conducted for further verification. However, data relating to some factors that might be associated with SHS exposure among children, such as parental educational level (Lin et al., 2010, Radic et al., 2011), income status of the family (Kit et al., 2013), or understanding of mothers on the harmful effects of SHS on children's health (Lin et al., 2010) were not collected in the SAQ with children due to children's limited awareness of such information.

Thirdly, due to the limited funds for the study, no biomarker analysis (for example cotinine assessment) was undertaken with the recruited children to verify their self-reported exposure to SHS, hence the finding of fewer in-home smokers might not be the same as a decrease in the amount of children's exposure to SHS at home. In this present study, the exposure of children to SHS at home was assessed on the basis of their responses in the SAQ. The occurrence of fathers or other smokers smoking in the home was also calculated on basis of the reported answers of children. To solve this problem, the study recruited a control school and a partial intervention school where the same data collection was implemented to compare children's self-reported exposure to SHS and children's reported smoking places of their fathers or other smokers living with them in the same home. Qualitative data collected from teachers, parents and children also contributed to the verification of this information.

Fourthly, only a few other intervention studies have been conducted on preventing SHS exposure using children as change agents to alter the smoking habits of adults. Therefore, the study faced challenges in finding appropriate literature for comparison. The principal investigator, however, did find numerous intervention studies on the use of children as agents of change in other areas, such as hygiene and environmental sanitation, diarrhoea prevention, and malaria and dengue prevention and control, to compare and discuss in this dissertation.

Last but not least, the study targeted primary school children aged 8 to 11. These young children might have misunderstood the content of the SAQ and provided some incorrect or biased responses. However, the study had foreseen this situation and had made preparations to overcome and minimise this challenge. The principal investigator referred to many materials on designing appropriate questions for children at primary school to inform the design of the SAQ (Bell, 2007, Borgers and Hox, 2001, Borgers et al., 2003). The SAQ, after being designed, had been pretested in the pilot study in November 2010 (Huong et al., 2011). Modifications and adjustments were made according to the results of the pilot study. Before completing the questionnaire in the classroom setting, children were given audio-taped instructions to avoid any bias arising from explanations given by different teachers.

7.7 Conclusions

The primary aim of this research was to provide a mechanism for creating a home environment free from secondhand smoke for children; this was done by involving primary school children aged 8 to 11 as change agents to change the place where adults smoke from indoors to outdoors. The school-based intervention was conducted in the full intervention school for 6 months, while no intervention activities were implemented in the partial intervention and the control schools.

In the baseline survey of the study, a high percentage of children in all three schools reported that they were exposed to SHS at home, and that a high percentage of fathers/other smokers smoked in the home. At this time, children's knowledge on the harmful effects of SHS, and their attitudes and practices on the avoidance of SHS and on the persuasion of their fathers and other smokers not to smoke in the home were limited across all three schools. However, post-intervention, this school-based intervention showed its success through the significant decrease in children from the full intervention school reporting that their fathers smoked in the home, and that they were exposed to SHS at home. After the intervention, children's knowledge on the harmful

effects of SHS on their health was improved; and their attitudes and practices on the avoidance of SHS exposure and on the persuasion of their fathers and other smokers not to smoke in the home were enhanced. This success was also confirmed by the binary logistic regression models of the study.

Another success of the study was its enhancement of the capacity of children to successfully act as change agents in persuading fathers and other smokers living with them not to smoke in the home. Not only was this the first intervention in Vietnam involving children as change agents in tobacco control, it was also one of the few intervention studies recruiting children as change agents in the country. This approach was accepted and supported by all stakeholders in the intervention program. The roles of children as change agents were verified by their parents and confirmed by their teachers and themselves. The involvement of mothers in the intervention was considered effective in protecting children from possible criticism and aggressiveness of fathers and other smokers in the family.

The intervention program implemented in the full intervention school was undertaken with the approval of the Chuong My District DoET and the participation of all teachers, primary school children and their parents in the full intervention school. All related stakeholders, including the Head and staff of the district DoET, Principal of the full intervention school, teachers, children and children's parents showed their support for implementing such interventions. Suggestions for improvement of the intervention were made by these groups, such as including children from Grades 1 and 2 in the intervention program, modifying the content of the program for appropriateness to younger children (more pictures, less text), and reformatting the SHS training materials into individual lessons. Suggestions from teachers for integrating the SHS training component into the afternoon session of primary education (both theory and practice) included teaching once a month in the extra education activities in the afternoon. Additional intervention materials, such as flyers and leaflets for children to bring home, were suggested by children's parents. The Head of the district DoET offered the opportunity of expanding the intervention program into other primary schools in the Chuong My district.

Suggestions from the teachers and the district Director of the DoET for the expansion of the program to other primary schools in the district should include in-service training on SHS for teachers, sharing experiences of the full intervention school with other primary schools in the district and the management from the DoET of the district during the implementation of the program.

7.8. Implications for future research

This study has indicated the success of a school-based intervention. The roles of children as change agents in reducing children's exposure to SHS at home were demonstrated. However, the present study was conducted in only one rural district of Hanoi and the intervention was implemented in only one primary school in the study district. Hence the study results could not be generalised for the rural areas of Vietnam or the whole country.

With 47.4% adult male and 1.4% adult female smokers in Vietnam (MOH, 2010), the prevalence of children who are living with smokers and are exposed to SHS in Vietnam is high, as indicated in much research and many studies (Suzuki et al., 2009, Wipfli et al., 2009, Hai et al., 2006, Huong et al., 2011). Therefore, it is suggested that similar school-based interventions in other parts of Vietnam be undertaken with children of primary school age to help them protect themselves from SHS by either moving away from SHS or persuading smokers to smoke outdoors. On the basis of participants' suggestions in Chapter 6, the extension of the intervention with appropriate modifications to include children in grades 1 and 2 should be further investigated.

As the current study did not undertake any measurement of biomarkers (e.g. urinary, salivary cotinine or cotinine in hair sample) among children who reported being exposed to SHS at home, such measurement is suggested for future research to validate children's self-reported exposure to SHS and to provide evidence if the status of smoking outdoor of fathers could be associated with the reduction in SHS exposure among children. In addition, interviews with parents of children and observations of the in-home/outdoor smoking behaviour of children's families should be conducted to further validate children's responses.

The study results revealed that the participating children in the full intervention school realised the danger of SHS to their health and either persuaded their fathers to smoke outdoors or moved away to avoid exposure to SHS. A follow-up study of these children after 5 or 10 years is suggested to investigate their smoking status in comparison to control groups. This could help to see if the intervention might contribute to reducing the uptake of smoking later in these children's lives.

Moreover, in future research, the possibility of children being change agents to help their parents to quit smoking should be explored. This idea is totally in line with Article 17 (Quit smoking) and Article 18 (Responsibilities of stakeholders in assisting people to quit smoking) of the Law on Tobacco Control in Vietnam.

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Appendices

Appendix 1 Self-administered questionnaire for children aged 8 to 11

CHILDREN'S KNOWLEDGE, ATTITUDES AND PRACTICE ON SECONDHAND SMOKE

Introduction

The aim of this questionnaire is to collect your ideas about breathing in the tobacco smoke from others as well as finding your capacity in persuading your parents and other adults in your family not to smoke in front of you and in your home. By filling in this questionnaire, you will contribute to tobacco control activities in Vietnam in general and in your commune in particular. Your answers will be kept confidentially and will only be used for the research purpose. Your parents have already agreed to let you participate in this study.

Do you want to continue participating in this study by filling in this questionnaire? (circle your answer).

1. Yes → continue with the following sections
2. No → finish. You can give this questionnaire back to your teacher.

Section A. Background information

No	Questions	Answer
A1	What is your school? *(Circle the most appropriate letter)*	a. Quang Bi Primary School b. Trung Hoa Primary School c. Tot Dong Primary School
A2	What class and grade are you studying?	……
A3	What is your name?	…….
A4	Are you a boy or a girl? *(Circle the most appropriate letter)*	a. Boy b. Girl
A5	How old are you? (What is your date of birth?)	….. years old (Date of birth: ……../……./……)
A6	How many sisters and/or brothers do you have? (do not include yourself) *(Circle the most appropriate letter)*	a. None b. One c. Two d. Three

		e. Four or more
A7	What is your father's occupation? *(Circle the most appropriate letter)*	a. Farmer b. Worker c. Other (please specify:……....)
A8	What is your mother's occupation? *(Circle the most appropriate letter)*	1. Farmer 2. Worker 3. Other (please specify:……....)
A9	What is your father's name?	…….
A10	What is your mother's name?	…….

Section B. Exposure to tobacco smoke

In this section, you are asked if there is/are (a) smoker(s) living with you in your family. You should follow the audio and the written instructions to fill in the form.

In this section, you should notice that there is a 'jump' column. You should pay attention to the arrow and wait for the audio instruction from the tape to fill in. If you are unable to do so, you could ask your teacher to stop playing the instruction from the tape and discuss with him/her on how to fill in the questionnaire first.

No	**Questions**	**Answers**	**Jump**
B1	Among every member in your family, does anyone smoke? (You should notice that you only mention members living in the same house with you) *(Circle the most appropriate letter)*	a. Yes b. No	➔ Continue with B2 ➔ Go to C1
B2	How many smokers are there in your family? *(Circle the most appropriate letter))*	a. One b. Two c. Three d. Four or more	
B3	Who are they? *(You can circle more than one letters if applicable)*	a. Father b. Mother c. Grandfather d. Grandmother e. Uncle	

		f. Aunt g. Brother h. Sister i. Other (*please specify …….*)	
B4	Where often do they smoke? *(Circle the most appropriate letter)*	a. Inside the house b. Outside the house	
B5	Have you had to breathe in the tobacco smoke from others inside your home during the past week? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ don't remember	

Section C. Knowledge of children on the harmful effects of smoking to smokers and secondhand smoke to children's health

No	Questions	Answers	Jump
The harmful effects of smoking to the health of smokers			
C1	Is smoking harmful to smokers? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ Not sure/ No opinion	➔ Continue with C2 ➔ Go to C3
C2	What are the health effects of smoking to smokers? *(You can circle more than one letters if applicable)*	a. Cough b. Pneumonia c. Bronchitis d. Lung cancer e. Bad breath f. Discoloured teeth g. Others (please specify:……)	
The harmful effects of secondhand smoke to children's health			
C3	Is tobacco smoke harmful to your health? *(Circle the most appropriate*	a. Yes b. No c. Don't know/ Not sure	➔ Continue with C4 ➔ Go to D1

	letter)		
C4	Can tobacco smoke cause children to <u>cough</u>? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ Not sure	
C5	Can tobacco smoke cause children to <u>wheeze</u>? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ Not sure	
C6	Can tobacco smoke cause children to have difficulty in breathing? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ Not sure	
C7	Can tobacco smoke cause children to produce sputum? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ Not sure	
C8	Can you name any other diseases causes by tobacco smoke? (*You can write down any diseases or symptoms you think that they might be caused by tobacco smoke*)	a. Yes (please specify:…….) b. No c. Don't know/ Not sure	

Section D. Children's attitudes on the avoidance of tobacco smoke and on the persuasion of adult smokers not to smoke in the home

Introduction

In this section, we will ask you about what you think when you have to breathe in tobacco smoke from others in your home and whether you feel confident when you persuade someone not to smoke inside your home. In this section, you should choose the faces that you think most suitable to your answers in the below questions. For example, in Question D1, if you feel happy when someone smokes inside your home and in front of you, you should circle "happy face" ☺ (face a); if you feel unsure, you should circle "not sure face" 😐 (face b); if you feel unhappy, you should circle "sad face" ☹ (face c). Another example is Question D5, if you agree with the statement that children who breathe in tobacco smoke might get sick, you should circle "happy face" ☺ (face a); if you feel unsure, you should circle "not sure face" 😐 (face b); if you don't agree with the statement, you should circle "sad face" ☹ (face c).

Now, let's begin with your questions and answers!

No	Questions	Answers			
D1	What do you feel when someone smokes inside your home? *(Circle the most appropriate face)*	a. ☺	b. 😐	c. ☹	
D2	What do you feel when someone smokes in front of you? *(Circle the most appropriate face)*	a. ☺	b. 😐	c. ☹	
D3	What do you feel when your father (and others living in your home) smokes inside your home? *(Circle the most appropriate face)*	a. ☺	b. 😐	c. ☹	
D4	What do you feel when your father (and others living in your home) smokes in front of you? *(Circle the most appropriate face)*	a. ☺	b. 😐	c. ☹	

D5	Do you agree with the statement 'Inhalation of tobacco smoke might cause children to be sick?' *(Circle the most appropriate face)*	a. ☺ b. 😐 c. ☹	
D6	Do you think that you can persuade adults not to smoke in the home? *(Circle the most appropriate face)*	a. ☺ b. 😐 c. ☹	
D7	Do you believe that, after your persuasion, adults will go outside to smoke? *(Circle the most appropriate face)*	a. ☺ b. 😐 c. ☹	
D8	What do you feel if adults do not pay attention to your persuasion? *(Circle the most appropriate face)*	a. ☺ b. 😐 c. ☹	
D9	Do you agree with the statement 'Children persuading adult smokers not to smoke in the home is NOT a rude action'? *(Circle the most appropriate face)*	a. ☺ b. 😐 c. ☹	

Section E. Children's practices on the avoidance of tobacco smoke and on the persuasion of adult smokers not to smoke in the home

E1	What do you do when you have to breathe in tobacco smoke? *(Circle the most appropriate*	a. Stay where there is tobacco smoke b. Go away from the tobacco smoke	

	letter)	c. Others (please specify:……..)	
E2	What do you do when you see someone smoking inside your home? *(Circle the most appropriate letter)*	a. Stay where there is tobacco smoke b. Go away from the tobacco smoke c. Others (please specify:……..)	
E3	Have you ever spoken to your parents and other smokers in your family about the harmful effects of tobacco smoke? *(All the persons must be living in the same house with you)* *(Circle the most appropriate letter)*	a. Yes b. No c. I don't remember d. My parents/others living with me don't smoke	
E4	Have you ever spoken to your parents and other smokers in your family about not smoking inside your home? *(All the persons must be living in the same house with you)* *(Circle the most appropriate letter)*	a. Yes b. No c. I don't remember e. My parents/other adults in my family don't smoke	
E5	What did your parents and other smokers in your home do when you spoke to them about not smoking inside the home? *(Circle the most appropriate letter)*	a. Went outside to smoke b. Continued smoking inside the home c. I don't remember d. Other (please specify:……) e. My parents/other adults in my family don't smoke	
This section is for children in the full intervention school at the end of the intervention only			
E6	Do you attend your teacher's lectures about the harmful effects of tobacco smoke and how to negotiate/persuade	a. Yes b. No c. I don't remember	

	others not to smoke in-home? *(Circle the most appropriate letter)*		
E7	What activities on tobacco control have you participated during the past six months? *(You can circle more than one letters if applicable)*	a. Drawing pictures on the harmful effects of tobacco smoke to children's health b. Participating in the games organised by your school on passive smoking prevention on the Youth Day (26 March 2012) c. Other activities (please specify):…..	
E8	Based on what you've learnt from school, do you think that you are able to explain about the harmful effects of tobacco smoke and its harmful effects to your father and other smoker(s) in your home? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't know/ Not sure	
E9	Were you successful in persuading your father and other smoker(s) living in your home about not to smoke in-home? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't remember/Not sure	
E10	Did your father/other smoker(s) living in your home get angry with you when you told him/other smoker(s) not to smoke in-home? *(Circle the most appropriate letter)*	a. Yes b. No c. Don't remember	
E11	Did your mother help you when	a. Yes	

	your father got angry with you when you persuaded him not to smoke in-home? *(Circle the most appropriate letter)*	b. No c. Don't remember	

You've just finished filling the questionnaire. Thank you so much for participating in the survey. You indeed contribute to the tobacco control activities in Vietnam and in your commune. We are proud of you!

Thank you.

Appendix 2 Guidelines for focus group discussions and in-depth interviews

Appendix 2.1 Guideline for focus group discussion with fathers of children aged 8 to 11 years old in Quang Bi Primary School (the full intervention school)

Informants:

- One group of 6 to 8 fathers, who agreed to smoke outdoors under the persuasion of their children.

Objectives of the FGD:

1. To explore children's efforts in persuading their fathers and other adult smokers to smoke outdoors in the locality
2. To identify the underlying reasons for the successfulness of children in convincing their fathers not to smoke in-home
3. To propose more effective ways for children in persuading fathers and other smokers not to smoke in-home with fathers' perspective for multiplying the intervention to other school settings.

Time for discussion: approximately 1 hour and 30 minutes.

Location: Quang Bi Primary School, Chuong My district

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker.
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with children's fathers.
2. Encourage the fathers to participate actively in the discussion
3. Let the fathers know that their information will be kept confidentially and will only be used for the study purpose, and they have the rights to refuse or to withdrawal from the FGD if they do not want to participate.

Content of the discussion

1. Please discuss the common of the smoking here as an estimated percentage?

2. How long have you been smoking?

- Year
- Estimation of the number of cigarettes or water-pipe you smoke a day
- The places you often smoke (indoors/outdoors/any changes in your smoking place during the past six months).

3. Discussion of the common of indoor smoking in your community
4. Discussion of your understanding about passive smoking and its harmful effects to children's health
5. Where did you receive the information of passive smoking and its harmful effects to children's health?
6. Over the past six months, what had your child done toward your smoking at home?

- Explaining the adverse health effects of smoking and passive smoking? In what way did your children explain this information to you?
- Persuading you and other smokers in your family not to smoke indoor and in front of them? In what way did your children persuading you and other smokers not to smoke indoor and in front of them?
- Showing you some products that your children created themselves? Eg. Drawings, slogans, short and simple poems, shaped models or statues etc. What do you think of those products?
    - Did the products attract your effort to smoke outdoor?
    - What do you think about the products made by your children? Are they effective in persuading you and/ or other smokers in your home not to smoke indoor?

7. Can you mention some of your impressions on what your children have done over the past six months in persuading you and other adult smokers in your family not to smoke indoor?
8. What do you think about the impact of the intervention program on the situation of passive smoking at your commune?

- Suitability in contents?
- Suitability in methods? (which the children played the central role in the intervention)

9. Any other activities on passive smoking intervention carried out in your communes apart from your children's efforts? Tell about that intervention (if any).
10. Any suggestions for expanding the program?

Appendix 2.2 Guideline for focus group discussion with fathers of children aged 8 to 11 years old in Quang Bi Primary School (the full intervention school)

Informants:

- One group of 6 to 8 fathers, who refused to smoke outdoors under the persuasion of their children.

Objectives of the FGD:

1. To explore children's efforts in persuading their fathers and other adult smokers to smoke outdoors in the locality
2. To identify the underlying reasons for the unsuccessfulness of children in convincing their fathers not to smoke in-home

Time for discussion: approximately 1 hour.

Location: Quang Bi Primary School, Chuong My district

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker.
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with children's fathers.
2. Encourage the fathers to participate actively in the discussion
3. Let the fathers know that their information will be kept confidentially and will only be used for the study purpose, and they have the rights to refuse or to withdrawal from the FGD if they do not want to participate.

Content of the discussion

1. Please discuss the common of the smoking here as an estimated percentage?
2. How long have you been smoking?

- Year:
- Estimation of the number of cigarettes or water-pipe you smoke a day

- The places you often smoke (indoors/outdoors/any changes in your smoking place during the past six months).

3. Discussion of the common of indoor smoking in your community.
4. Discussion of your understanding about passive smoking and its harmful effects to children's health
5. Where did you receive the information of passive smoking and its harmful effects to children's health?
6. Over the past six months, what had your child done toward your smoking at home?

- Explaining the adverse health effects of smoking and passive smoking? In what way did your children explain this information to you?
- Persuading you and other smokers in your family not to smoke indoor and in front of them? In what way did your children persuading you and other smokers not to smoke indoor and in front of them?
- Showing you some products that your children created themselves? Eg. Drawings, slogans, short and simple poems, shaped models or statues etc. What do you think of those products?

7. When you were smoking and your child approached you to persuade you to smoke outdoors, what did you do?

- Did you get angry with him/her and why?
    - Did your wife help your children?
    - How did your wife help your children?

8. Why did you refuse to smoke outdoors under your child's persuasion?

- What were his/her unsuccessfulness?

9. What do you think about the intervention in which children play a central role in persuading adults to smoke outdoors?

- Feasibility?
- Suitability?
- Any of your suggestion?
- Suitability in contents?
- Suitability in methods? (which the children played the central role in the intervention)

Appendix 2.3 Guideline for focus group discussion with mothers of children aged 8 to 11 years old in the full intervention school

Informants:

- One group of 6 to 8 mothers (their husbands smoked and their children aged 8 to 11 years old studying in the full intervention school)

Objectives of the FGD:

1. To explore children's efforts in persuading their fathers and other adult smokers to smoke outdoors in the locality
2. To identify the underlying reasons for the successfulness and the unsuccessfulness of children in convincing their fathers not to smoke in-home
3. To propose more effective ways for children in persuading fathers and other smokers not to smoke in-home with fathers' perspective for multiplying the intervention to other school settings

Time for discussion: approximately 1 hour and 30 minutes.

Location: Quang Bi Primary School, Chuong My district

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker.
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with children's mothers.
2. Encourage the mothers to participate actively in the discussion
3. Let the mothers know that their information will be kept confidentially and will only be used for the study purpose, and they have the rights to refuse or to withdrawal from the FGD if they do not want to participate.

Content of the discussion

1. Please discuss the common of the smoking here as an estimated percentage?
2. How long has your husband been smoking (ask each individual)?

- Estimation of the number of cigarettes or water-pipe your husband smoke a day
- The places your husband often smoke (indoors/outdoors/any changes in your husband smoking place during the past six months).

3. Discussion of the common of indoor smoking in your community
4. Discussion of your understanding about passive smoking and its harmful effects to children's health
5. Where did you receive the information of passive smoking and its harmful effects to children's health?
6. Over the past six months, what had your child done toward your smoking at home?

- Explaining the adverse health effects of smoking and passive smoking? In what way did your children explain this information to your husband?
- Persuading your husband and other smokers in your family not to smoke indoor and in front of them? In what way did your children persuading your husband and other smokers not to smoke indoor and in front of them?
- Showing your husband some products that your children created themselves? Eg. Drawings, slogans, short and simple poems, shaped models or statues etc. What do you think of those products?
    - Did the products attract your husband effort to smoke outdoor?
    - What do you think about the products made by your children? Are they effective in persuading your husband and/ or other smokers in your home not to smoke indoor?

7. Did your husband/other adult smokers in your family get angry when you children persuaded him/them to smoke outdoors?

- Did your children ask for your help?
- What did you help your children during that situation? Was it successful?

8. Can you mention some of your impressions on what your children have done over the past six months in persuading your husband and other adult smokers in your family not to smoke indoor?
9. What do you think about the impact of the intervention program on the situation of passive smoking at your commune?

- Suitability in contents?

- Suitability in methods? (which the children played the central role in the intervention)

10. Any other activities on passive smoking intervention carried out in your communes apart from your children's efforts? Tell about that intervention (if any).

11. Any suggestions for expanding the program?

Appendix 2.4 Guidelines for focus group discussion with fathers of children aged 8 to 11 years old in the partial intervention and the control schools

Informants:

- One group of 6 to 8 fathers (who smoke and have children aged 8 to 11 years old studying in the partial intervention school)
- One group of 6 to 8 smoking fathers (who smoke and have children aged 8 to 11 years old studying in the control school)

Objectives of the FGD:

1. To explore children's capacity in avoiding exposure to SHS at home and their fathers' actions to help children stay away from SHS.
2. To investigate fathers' supports for the ideas of using children as change agents in persuading adult smokers to smoke outdoors

Time for discussion: approximately 1 hour.

Location: At the partial intervention school and at the control school

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with parents.
2. Encourage fathers to participate actively in the discussion
3. Let fathers know that their information will be kept confidentially and will only be used for the study purpose.

Content of the discussion

1. Please discuss the common of smoking here as an estimated percentage?
2. How long have you been smoking?

- Year

- Estimation of the number of cigarettes or water-pipe you smoke a day
- The places you often smoke (indoors/outdoors/any changes in your smoking place during the past six months)

3. Discuss the common of indoor smoking in your community?
4. Discussion of your understanding about passive smoking and its harmful effects to children's health?
5. Where do you gain the information on passive smoking from?

- TV, radio, newspapers?
- Your children?
- Others?
- Weighing the above information sources

6. What did your children do when you smoke indoor or in front of them?

- Stay there with tobacco smoke/go away
- What made them stay away?
- Remind children to go away? Frequency?

7. What do you think about an intervention in which children act as a central role in persuading adult smoker not to smoke indoors?

Appendix 2.5 Guidelines for focus group discussion with teachers teaching grades 3, 4 and 5 in the full intervention school

Informants:

- One group of 6 to 8 teachers teaching grades 3, 4 and 5

Objectives of the FGD:

1. To examine the feasibility and suitability of the teaching content on SHS of the intervention program in the school
2. To explore the ability of integrating the content of SHS into the primary education program

Time for discussion: approximately 1 hour and 30 minutes

Location: At the full intervention school

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with teachers.
2. Encourage teachers to participate actively in the discussion
3. Let teachers know that their information will be kept confidentially and will only be used for the study purpose.

Content of the discussion:

1. Discuss the common of smoking and indoor smoking in the community.
2. Discuss about the content of the two lessons on tobacco control in Grade 3 (Subject Nature and Society) and in Grade 5 (Subject Sciences) and its sufficient information in helping children to gain awareness on the issue of SHS and its harmful effects to children's health.
3. Discuss the process of integrating the SHS content in the teaching program in the past six months?

- The participation of children?

- Teaching method? (theory, practices, games, role plays etc.)
- Any outcomes that children shared in class?
- Did the program contribute to the better knowledge, attitudes and practices of children on SHS? In what ways?

4. Any suggestions for improving the quality of the teaching handouts and the posters in class? Or suggest another way to deliver the information to children?
5. Any workload for you if your boss approve for the integration of tobacco smoke and its harmful effects to children's health into the afternoon session of the primary education program? Please clarify.
6. Any suggestions for the expanding of the program?

- Contents of the program?
- The initial ages to start the program?
- Any adjustment for the teaching contents if you propose a different initial ages to start the program?
- Suggestions for the implementing of the tobacco content in the primary education program?

Appendix 2.6 Guidelines for focus group discussion with children aged 8 to 11 years old in the full intervention school

Informants:

- One group of 6 to 8 children in grade 3 who lived with smoker(s)
- One group of 6 to 8 children in grade 4 who lived with smoker(s)
- One group of 6 to 8 children in grade 5 who lived with smoker(s)

Objectives of the FGD:

1. To examine children's capacity in persuading their fathers and other adult smokers to smoke outdoors
2. To examine the feasibility and the suitability of the teaching content on SHS under children's perspectives

Time for discussion: approximately 1 hour

Location: At the full intervention school

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with children.
2. Encourage children to participate actively in the discussion
3. Let children know that their information will be kept confidentially and will only be used for the study purpose, and their participation was approved by their parents.

Content of the discussion:

1. What do you understand about the harmful effects of tobacco smoke to your health?

- Any symptoms and diseases

2. What did you learn at school about the tobacco smoke and its harmful effects to your health?
3. How did you teacher teach you the content of tobacco smoke?

- Frequency of teaching per week
- Teaching methods that teachers applied (lecture, any games, role plays, etc.)
- Any difficulties in understanding the teaching contents delivered by teachers?

4. Did you participate into the competition game organised on the Youth Union day (26 March 2012) and the drawing competition organised by the school? Elaborate what you did in the games?

- The competition game
- The drawing competition

5. Were you able to explain to your fathers and/or other adult smokers in your home about the harmful effects of tobacco smoke to children's health? How did you explain?
6. Were you able to successfully persuade your fathers and/or other adult smokers to stop smoking indoors and went out to smoke? How did you persuade?
7. Did your fathers/other adult smokers in your home get angry with you? How did they get angry? (Describe in detail).
8. Did your mother help you when smokers got angry with you? How did your mother help (Describe in detail)?
9. Do you think that if teachers in other schools also teach the similar contents that your teachers taught you, can children in the other school persuade smokers to smoke outdoors? Why?
10. Can children younger than you understand the content that you were taught by your teachers? Why do you think that?

Appendix 2.7 Guidelines for focus group discussion with children aged 8 to 11 years old in the partial intervention school and the control school

Informants:

- One group of 6 to 8 children in grade 3 who lived with smoker(s)
- One group of 6 to 8 children in grade 4 who lived with smoker(s)
- One group of 6 to 8 children in grade 5 who lived with smoker(s)

Objectives of the FGD:

1. To further elaborate children's KAP on the harmful effects of SHS to children's health
2. To examine children's capacity in avoiding exposure to SHS at home

Time for discussion: approximately 1 hour

Location: At the partial intervention school and at the control school

Preparation for the group discussion:

1. An experienced moderator (Principal Investigator) and a note taker
2. Pens, papers
3. Two audio digital recorders with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with children.
2. Encourage children to participate actively in the discussion
3. Let children know that their information will be kept confidentially and will only be used for the study purpose, and their participation was approved by their parents.

Content of the discussion:

1. What do you think about the smoking in your community?
2. What do you think about the in-home smoking in your community?
3. What did you learn at school about the tobacco smoke and its harmful effects to your health?

- Ask children describe the two contents on tobacco smoke in Grade 3 and Grade 5.

4. What do you understand about the harmful effects of tobacco smoke to your health?

- Any symptoms and diseases mentioned by children

5. Where often does (do) your father/ other adult smokers smoke? (Indoors vs outdoors)
6. What do you often do when you see your father/other adult smokers smoke indoors or in front of you?

- Identify if children are exposed to SHS at home and the frequency of exposure to SHS
- Try to explore any inhibitors that make children fail to avoid exposing to SHS if possible

7. Do you think that you can persuade your father/ other adult smokers to smoke outdoors? If yes, why do you think so? If no, why not?
8. Have you ever tried to persuade your father/other adult smokers in your home to smoke outdoors? If yes, please describe.

Appendix 2.8 Guidelines for in-depth interview with the Principal of the full intervention school and the Head of the Department of Education and Training in Chuong My district

Informants:

- The head of the full intervention school
- The head of the Department of Education and Training in Chuong My district

Objective of the IDI:

1. To seek for the opinions of the local leaders about the intervention program on SHS at the full intervention school
2. To identify the opportunity for expanding the intervention program into other primary schools in the district and in a wider scale

Time: approximately 1 hour

Location: at the full intervention school and at the Department of the Education and Training of the district

Preparation for the IDI:

1. An experienced moderator (Principal Investigator) and a note taker
2. Pens, papers
3. One audio digital recorder with good quality.

Start the group discussion:

1. Introduce the purpose of the FGD in a familiar and friendly way to create a warm environment and close relationship with children.
2. Encourage the informant to participate actively in the discussion
3. Let the informant know that their information will be kept confidentially and will only be used for the study purposes.

Content of the IDI:

1. What do you think about the capacity of primary school children in persuading adult smokers to smoke outdoors?

2. Talking about the intervention program in the full intervention school, do you think it is a workload for your teachers to teach the content of SHS as a requirement from the intervention program? If yes, why? If no, why?
3. What do you think about the effectiveness of the intervention program?

- In increasing children's KAP on the issue of SHS
- In contributing to the decrease of SHS exposure among children

4. Do you think children can persuade adult smokers to smoke outdoors if they just receive the information on tobacco issues and SHS from the two lessons (one in grade 3 and one in grade 5) in the primary education program (remind of the two lessons for the informants)? If yes, explain? If no, why?
5. What do you think about the chance of expanding the intervention program to other primary schools? And how?
6. Any requirements for the support of the intervention program if you decide to expand the program into other primary schools?

- The initial age for teaching the program?
- The modification of the teaching content in class?
- The modification of the implementation of the teaching of tobacco smoke in the primary education program?

7. Any suggestions for the expansion of the intervention program?

- Support for training materials/posters/leaflets/etc.?
- Financial support
- Other supports

Appendix 3. Gate Keeper Approval

HANOI DEPARTMENT OF EDUCATION AND TRAINING
DEPARTMENT OF EDUCATION AND TRAINING, CHUONG MY DISTRICT

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

APPROVAL LETTER FOR THE IMPLEMENTATION OF THE PROJECT

"Developing a trial intervention model Children Say No to Secondhand Smoke"

The Department of Education and Training of Chuong My District has received the proposal "Developing a trial intervention model Children Say No to Secondhand Smoke" from Ms. Le Thi Thanh Huong, a PhD candidate at The University of Queensland, Australia. After reviewing Ms. Huong's proposal, we have the following comments:

- If the Project is implemented at some primary schools in the District, knowledge of children at the intervention primary school will be enhanced. Based on this, children will acquire the skills in persuading their parents not to smoke indoor and in their vicinity, therefore reducing their exposure to secondhand smoke. The Project also can help children to protect themselves from secondhand smoke.
- If the Project is implemented successfully, this trial intervention can be developed to other primary schools, which have similar conditions in other regions.

Based on these comments, the Department of Education and Training of Chuong My District agrees to let Ms. Le Thi Thanh Huong to run this project in the District at the primary schools of Quang Bi, Trung Hoa and Tot Dong and some other primary schools from the school year 2010 – 2011 to the school year 2011 – 2012 (i.e. from September 2010 to the end of May 2012). Staff of the Department will consult Ms. Huong to help her to find another primary school for her explanatory and pilot survey.

The Department of Education and Training of Chuong My district will support Ms Huong with administrative procedures so that she can implement the Project successfully in the district.

Hanoi, 9 September 2010

DIRECTOR
DEPARTMENT OF EDUCATION AND TRAINING -
CHUONG MY DISTRICT

Nguyễn Văn Vượng

Appendix 4 Participant Information Sheet

Participant Information Sheet (PIS) were designed and prepared for teachers, for the parents (participating children's), parents (their own participation), and officials from DoET.

Examples of PIS are given below.

Appendix 4.1 Participant Information Sheet for Parents of Children in the Full Intervention School

Project: Developing a trial model "Children Say No to Secondhand Smoke"

Principal Investigator: Le Thi Thanh Huong, PhD candidate, University of Queensland

Supervisors: Prof. Mike Capra, University of Queensland; Dr. Margaret Cook, University of Queensland; Prof. Le Vu Anh, Hanoi School of Public Health

PARTICIPANT INFORMATION SHEET

(for parents/ guardians of children in the full intervention school)

This project is seeking your child assistance in developing a trial model "Children Say No to Secondhand Smoke" in order to create, in Vietnam, home environments free from tobacco smoke for children. In this project, children will play a central role in persuading their fathers and other smokers not to smoke indoor. This project is being conducted under the supervision of Ms Le Thi Thanh Huong, a PhD candidate at the University of Queensland (UQ).

Tobacco smoke is very harmful to child health. Children are most at risks of being involuntarily exposed to the environments where tobacco smoke is available, especially at home or in closed buildings. The adverse health effects that children can have after inhaling tobacco smoke are lower respiratory tract infections, including pneumonia and bronchitis, middle ear diseases, cough and wheezing, increased severity of asthma, lower lung function etc. This is why children should be protected from tobacco smoke. In order to have an indoor environment free from tobacco smoke for children, several measures could be implemented, such as: adults not smoking indoor,

have children stay away from tobacco smoke or even have children persuade adults not to smoke in the home.

In this study, your child will be given a self-administered questionnaire about the effects of passive smoking and what you and your child can do at home to prevent your child's exposure to tobacco smoke. Your child will fill in the questionnaire in his/her classroom setting, it is anticipated that this will take 30 minutes. Apart from that, your child will be taking part in an intervention program namely "Children Say No to Secondhand Smoke". In this program, he/she will participate in classroom activities delivered by his/her teacher on the harmful effects of secondhand smoke and will attain some persuasive and negotiation skills. After acquiring such knowledge and skills, he/she will explain to others in your family the harmful effects of secondhand smoke on child health and will try to persuade smoker(s) in your family not to smoke in the home. These intervention activities will last for about 6 months.

You might also be invited to participate in a one to two hour group discussion, to be held at your child's school, with other parents who have children studying in Grade 3, 4 and 5. The purpose is to discuss the success of children's negotiation with parents in respect to smoking indoors and suggestions for further improvement in a program in which children can play an important role in persuading adults not to smoke indoors. If you are invited to participate in the group discussion you will be provided with VND 200,000 to cover your expenses in attending.

It is anticipated that there is no foreseeable additional risk associated with you, but some minimal risks may be associated with your child's participation, in relation to their attempted persuasion of smokers to avoid smoking in the home.

Participation in this project is totally voluntary. You and your child have the right to refuse to participate in this study without any threats or disadvantages. If you do agree to let your child participate in this study, you will have the complete right to change your mind and withdraw your child's participation at any time without any explanation. Your child's academic results and his/her relationships with other friends and teachers at school will not be negatively affected by your refusal or withdrawal.

The investigator of this project will keep your child's information confidentially. Your child's information is only used for study purpose and not for any other purposes, and will not be given to anyone without your permission. Information given by your child will be stored at a locked box that no one can access except for the investigator and her supervisors. Your child is assured that

none of his/her information will be revealed in anyway that will identify him/her in any report of the study.

A summary of the final report will be sent to your child's school and the Department of Education and Training of Chuong My district. This report will be made available to you through your child's teacher.

Should you have any enquiries about the project as well as your child rights in the project, please contact Ms Le Thi Thanh Huong at the following address:

Ms Le Thi Thanh Huong
Department of Environmental Health
Hanoi School of Public Health
138 Giang Vo – Hanoi – Vietnam
Email: lth@hsph.edu.vn
Phone: +84 4 62662322/ + 84 912056596

This study has been cleared by one of the human ethics committees of the University of Queensland in accordance with the National Health and Medical Research Council's guidelines. You are of course, free to discuss your participation in this study with project staff (contactable as above). If you would like to speak to an officer of the University of Queensland not involved in the study, you may contact the Ethics Officer on +617 3365 3924.

Alternatively you may contact Ms Le Thi Kim Anh – The Secretary of the Ethical Committee – Hanoi School of Public Health, as below:

- Email: ltka@hsph.edu.vn
- Phone: +84462662385
- Fax: +84462662385
- Address: Ethical Committee – Hanoi School of Public Health

  138 Giang Vo, Hanoi, Vietnam

- Website: http://www.hsph.edu.vn/nckhhddd

Appendix 4.2 Participant Information Sheet for Mothers of Children in the Full Intervention School

Project: Developing a trial model "Children Say No to Secondhand Smoke"

Principal Investigator: Le Thi Thanh Huong, PhD candidate, University of Queensland

Supervisors: Prof. Mike Capra, University of Queensland; Dr. Margaret Cook, University of Queensland; Prof. Le Vu Anh, Hanoi School of Public Health

PARTICIPANT INFORMATION SHEET

(for mothers/female guardians of children in the full intervention school)

This project is seeking your child assistance in developing a trial model "Children Say No to Secondhand Smoke" in order to create, in Vietnam, home environments free from tobacco smoke for children. In this project, children will play a central role in persuading their fathers and other smokers not to smoke indoor. This project is being conducted under the supervision of Ms Le Thi Thanh Huong, a PhD candidate at the University of Queensland (UQ).

Tobacco smoke is very harmful to child health. Children are most at risks of being involuntarily exposed to the environments where tobacco smoke is available, especially at home or in closed buildings. The adverse health effects that children can have after inhaling tobacco smoke are lower respiratory tract infections, including pneumonia and bronchitis, middle ear diseases, cough and wheezing, increased severity of asthma, etc. This is why; children should be protected from tobacco smoke. In order to have an indoor environment free from tobacco smoke for children, several measures could be implemented, such as: adults not smoking indoor, have children stay away from tobacco smoke or even have children persuade adults not to smoke in the home.

In this study, your child will be taking part in an intervention program namely "Children Say No to Secondhand Smoke". In this program, he/she will participate in classroom activities delivered by his/her teacher on secondhand smoke and will attain some persuasion and negotiation skills. After acquiring such knowledge and skills, he/she will explain to others in your family the harmful effects of secondhand smoke on child health and will try to persuade smoker(s) in your family not to smoke in the home. These intervention activities will last for about 6 months.

It is anticipated that there might be some minimal risks associated with your child's participation, such as the displeasure of your husband or other smokers in your family. You are invited to participate in the intervention to help your child to avoid any such risk by, if necessary, assisting your child in explaining to your husband or other smokers in your family the intent of reducing tobacco smoke in the home to protect your child's health. There are no foreseeable risks associated with your participation.

You might also be invited to participate in a one to two hour group discussion, to be held at your child's school, with other mothers who have children studying in Grade 3, 4 and 5. The purpose is to discuss the success of children's negotiation with parents in respect to smoking indoor and suggestions for further improvement in a program in which children can play an important role in persuading their parents not to smoke indoor, and to identify your role as protective agent for your child. If you are invited to participate in the group discussion you will be provided with VND 200,000 to cover your expenses in attending.

Participation in this project is totally voluntary. You and your child have the right to refuse to participate in this study without any threats or disadvantages. If you do agree to let your child participate in this study, you will have the complete right to change your mind and withdraw your child's participation at any time without any explanation. Should you exercise this right your child will be withdrawn from the project. Your child's academic results and his/her relationships with other friends and teachers at school will not be negatively affected by your refusal or withdrawal.

The investigator of this project will keep your child's information confidentially. Your child's information is only used for study purpose and not for any other purposes, and will not be given to anyone without your permission. Information given by your child will be stored at a locked box that no one can access except for the investigator and her supervisors. Your child is assured that none of his/her information will be revealed in any way that will identify him/her in any report of the study.

A summary of the final report will be sent to your child's school and the Department of Education and Training of Chuong My district. This report will be made available to you through your child's teacher.

Should you have any enquiries about the project as well as your child rights in the project, please contact Ms Le Thi Thanh Huong at the following address:

Ms Le Thi Thanh Huong

Department of Environmental Health

Hanoi School of Public Health

138 Giang Vo – Hanoi – Vietnam

Email: lth@hsph.edu.vn

Phone: +84 4 62662322/ + 84 912056596

This study has been cleared by one of the human ethics committees of the University of Queensland in accordance with the National Health and Medical Research Council's guidelines. You are of course, free to discuss your participation in this study with project staff (contactable as above). If you would like to speak to an officer of the University of Queensland not involved in the study, you may contact the Ethics Officer on +617 3365 3924.

Alternatively you may contact Ms Le Thi Kim Anh – The Secretary of the Ethical Committee – Hanoi School of Public Health, as below:

- Email: ltka@hsph.edu.vn
- Phone: +84462662385
- Fax: +84462662385
- Address: Ethical Committee – Hanoi School of Public Health

  138 Giang Vo, Hanoi, Vietnam

- Website: http://www.hsph.edu.vn/nckhhddd

Appendix 5 Consent form

Consent forms were designed and prepared for teachers, for the parents (participating children's), parents (their own participation), and officials from DoET.

An example of consent form for parents is given below.

Project: Developing a trial model "Children Say No to Secondhand Smoke"

Principal Investigator: Le Thi Thanh Huong, PhD candidate, University of Queensland

Supervisors: Prof. Mike Capra, University of Queensland; Dr. Margaret Cook, University of Queensland; Prof. Le Vu Anh, Hanoi School of Public Health

CONSENT FORM

(For parents or legal guardians of children in the full intervention school)

About the project:

The project Developing a trial model "Children Say No to Secondhand Smoke" aims at creating a home environment free from tobacco smoke for children.

Agreement to participate in the study:

I have read the participant information sheet and I hereby consent to let my child, ……, who is in Grade ……. at Quang Bi Primary School to participate in the project "Developing a Trial Intervention Model Children Say No to Secondhand Smoke" and I understand the scope of the project. I understand that:

- My child will have to fill in a self-administered questionnaire for about 30 minutes in his/ her classroom setting
- My child will be involved in an intervention program namely "Children Say No to Secondhand Smoke". In this program, he/she will participate in classroom activities

delivered by his/her teacher on secondhand smoke and will attain some persuasive and negotiation skills. After acquiring such knowledge and skills, he/she will explain to others in my family the harmful effects of secondhand smoke on child health and will persuade smoker(s) in my family not to smoke in the home. The duration of the intervention is expected to be 6 months.

- My child's participation is totally voluntary, and he/she may refuse to answer any question and he/ she remains free to withdraw from the study at any time without explanation.
- I have the right to deny permission for my child to participate in the project. If I have already agreed to let him/her participate in the project, I can change my mind and withdraw his/her participation at any time without any explanation. My child's academic results and other relationships at school will not be negatively affected by my refusal or withdrawal.
- My child's confidentiality will be maintained at all times. Only the principal investigator and her supervisors will have access to the information given by my child. All this information will be stored in a secure place. This information will be destroyed five years after the project ends.
- None of the information that my child provides will be revealed in any way that will identify my child in any report of the study.
- I or my child will receive no benefit from participation.
- I have been given opportunity to ask any questions about the project at any time.

Parent's name:……..	Parent's Signature:……
Date:……	

Appendix 6 A1-size posters to be hung in class

Appendix 6.1 A1-size poster 'Do you know the harmful effects of tobacco smoke?' (English version)

TRƯỜNG ĐẠI HỌC Y TẾ CÔNG CỘNG

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

American Cancer Society

DO YOU KNOW THE HARMFUL EFFECTS OF TOBACCO SMOKE?

Tobacco smoke may cause you to suffer:

- Pneumonia
- Bronchitis
- Coughing, wheezing, sputum, running nose, breathlessness, etc.
- Exacerbation of asthma
- Lower lung function
- Middle ear disease

→ **You might be sick and might miss school.**

Stay away from tobacco smoke – a smart choice!

You should persuade your father and other smokers living with you not to smoke inside your house!

Appendix 6.2 A1-size poster 'Do you know the harmful effects of tobacco smoke?' (Vietnamese version)

TRƯỜNG ĐẠI HỌC Y TẾ CÔNG CỘNG
HANOI SCHOOL OF PUBLIC HEALTH

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

American Cancer Society

EM CÓ BIẾT: TÁC HẠI CỦA KHÓI THUỐC LÁ?

Khói thuốc lá có thể làm em bị:

- Viêm phổi
- Viêm phế quản
- Ho, khò khè, có nhiều đờm dãi, chảy nước mũi, khó thở, v.v
- Hen phế quản
- Suy giảm chức năng phổi
- Viêm tai giữa

→ **Em có thể bị ốm và có thể phải nghỉ học**

Tránh tiếp xúc với khói thuốc lá/khói thuốc lào – Sự lựa chọn thông minh của em!

Em cần vận động người thân không hút thuốc lá và thuốc lào bên trong nhà của em

Appendix 6.3 A1-size poster 'How to persuade your fathers and other adults not to smoke inside your house' (English version)

TRƯỜNG ĐẠI HỌC Y TẾ CÔNG CỘNG

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

American Cancer Society

HOW TO PERSUADE YOUR FATHERS AND OTHER ADULTS NOT TO SMOKE INSIDE YOUR HOUSE?

Convincing adults not to smoke inside the home is not a rude action!

DON'T:
- Be exposed to tobacco smoke

DO:
- Persuade adults to go outside to smoke
- Avoid tobacco smoke

You should persuade your father, your grandfather and other smokers living with you not to smoke inside your house with your mother's assistance

Appendix 6.4 A1-size poster 'How to persuade your fathers and other adults not to smoke inside your house' (Vietnamese version)

TRƯỜNG ĐẠI HỌC Y TẾ CÔNG CỘNG
HANOI SCHOOL OF PUBLIC HEALTH

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

American Cancer Society

CÁCH THUYẾT PHỤC BỐ VÀ NGƯỜI LỚN KHÔNG HÚT THUỐC LÁ VÀ THUỐC LÀO TRONG NHÀ

KHÔNG NÊN:
- **Hít ngửi khói thuốc lá và khói thuốc lào**

NÊN:
- **Chủ động thuyết phục người lớn ra ngoài hút thuốc lá**
- **Tránh tiếp xúc với khói thuốc lá và khói thuốc lào**

Em cần nhẹ nhàng thuyết phục bố, ông và người lớn không hút thuốc trong nhà với sự giúp đỡ của mẹ

Appendix 7 Teacher's handbook

(Cover in English and content in Vietnamese)

TRƯỜNG ĐẠI HỌC Y TẾ CÔNG CỘNG
HANOI SCHOOL OF PUBLIC HEALTH

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

American Cancer Society

TRAINING MATERIAL

SECONDHAND SMOKE AND ITS HARMFUL EFFECTS TO CHILDREN'S HEALTH

AND

HELPING CHILDREN TO BE ABLE TO PERSUADE ADULTS NOT TO SMOKE INSIDE THE HOME

(This training material is designed for teachers teaching grades 3, 4 and 5 at Quang Bi Primary School, Chuong My district, Hanoi)

Hanoi, October 2011

TRƯỜNG ĐẠI HỌC Y TẾ CÔNG CỘNG
HANOI SCHOOL OF PUBLIC HEALTH

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

American Cancer Society®

TÀI LIỆU TẬP HUẤN

TÁC HẠI CỦA KHÓI THUỐC LÁ TỚI SỨC KHỎE TRẺ EM

VÀ

CÁCH THUYẾT PHỤC, VẬN ĐỘNG NGƯỜI LỚN KHÔNG HÚT THUỐC TRONG NHÀ

Tài liệu dành cho giáo viên chủ nhiệm lớp 3-4-5 Trường Tiểu học Quảng Bị, huyện Chương Mỹ, Hà Nội

Hà Nội, tháng 10/2011

Giới thiệu

Nghiên cứu "Xây dựng mô hình can thiệp Trẻ em nói không với hút thuốc lá thụ động" do Trường Đại học Y tế công cộng thực hiện dưới sự hỗ trợ một phần về kinh phí của Hiệp hội Ung thư Hoa Kỳ (ACS) và sự phối hợp của Phòng Giáo dục và Đào tạo huyện Chương Mỹ. Mục đích của nghiên cứu nhằm tạo ra một môi trường nhà ở thân thiện, không có khói thuốc lá cho trẻ em.

Nghiên cứu được thực hiện tại ba trường tiểu học của huyện Chương Mỹ là Quảng Bị, Trung Hòa và Tốt Động, trong đó Trường Tiểu học Quảng Bị là trường được chọn can thiệp. Trước khi can thiệp, một đợt điều tra cơ bản được thực hiện nhằm tìm hiểu kiến thức, thái độ và thực hành của trẻ về tác hại của khói thuốc lá đối với sức khỏe trẻ em cũng như sự vận động bố và những người thân khác không hút thuốc trong nhà và trước mặt trẻ.

Học sinh các lớp 3-4-5 của Trường Tiểu học Quảng Bị sẽ nhận được những kiến thức về tác hại của khói thuốc lá tới sức khỏe trẻ em do các thầy/ cô giáo chủ nhiệm cung cấp qua các giờ tự học vào buổi chiều. Ngoài các kiến thức cơ bản này, các thầy/ cô giáo sẽ hướng dẫn học sinh cách vận động, thuyết phục người lớn không hút thuốc trong nhà một cách hiệu quả.

Từ những kiến thức và kỹ năng học được tại trường, học sinh sẽ chia sẻ những hiểu biết của các em về tác hại của khói thuốc lá với các thành viên của gia đình và vận động, thuyết phục bố và những người hút thuốc khác không hút thuốc trong nhà và không hút thuốc trước mặt trẻ con.

Cuối đợt can thiệp, một đợt điều tra nữa sẽ được tiến hành nhằm tìm hiểu sự thay đổi về kiến thức của trẻ về tác hại của khói thuốc lá, về thái độ cũng như thực hành của trẻ trong việc vận động, thuyết phục bố và những người thân khác không hút thuốc trong nhà, cũng như sự tiếp xúc của trẻ với khói thuốc lá tại nhà.

Người lớn hãy lắng nghe lời con trẻ trong chương trình can thiệp nhằm tạo môi trường nhà ở thân thiện, không có khói thuốc lá cho trẻ em!

MỤC TIÊU LỚP TẬP HUẤN

Sau khi tham dự xong lớp tập huấn này, các giáo viên sẽ có khả năng:

1. Hiểu biết về các chất độc hại có trong khói thuốc lá và truyền tải được các kiến thức này tới học sinh
2. Hiểu biết đầy đủ về các tác hại của khói thuốc lá gây ra cho sức khỏe trẻ em và truyền tải được các kiến thức này tới học sinh
3. Hướng dẫn học sinh thực hành các kỹ năng vận động, thuyết phục người lớn không hút thuốc trong nhà tại lớp học thông qua hình thức đóng vai
4. Hướng dẫn học sinh thực hiện các kỹ năng vận động, thuyết phục người lớn không hút thuốc trong nhà tại chính gia đình của học sinh
5. Hướng dẫn, vận động học sinh tham gia vào các trò chơi được tổ chức tại trường nhằm khuyến khích học sinh tìm hiểu về tác hại của khói thuốc lá đối với sức khỏe của học sinh

PHẦN 1.

TÁC HẠI CỦA KHÓI THUỐC LÁ TRONG MÔI TRƯỜNG TỚI SỨC KHỎE TRẺ EM

1. Khói thuốc lá là gì?

- Khói thuốc lá là khói từ đầu mẩu điếu thuốc lá đang cháy và từ khói thuốc do người hút thuốc lá phả ra/ thở ra môi trường sau khi họ rít thuốc
- Khói thuốc lá cũng có thể được hiểu là khói từ bát thuốc lào được hút và từ hơi thuốc do người hút thuốc lào phả ra/ thở ra sau khi họ rít thuốc
- Có thể hiểu tóm tắt: Khói thuốc lá là khói thuốc từ các sản phẩm thuốc lá/ thuốc lào đang cháy và khói do người hút thuốc thở ra môi trường ngay sau khi họ rít thuốc.

Hình 1. Một số hóa chất độc hại tiêu biểu có trong khói thuốc lá

(Nguồn: Tổ chức Y tế thế giới, 2009; Bộ Y tế Hoa Kỳ, 2010)

Giáo viên cần lưu ý cung cấp cho học sinh nội dung cốt lõi sau:

Khói thuốc lá là khói thuốc từ các sản phẩm thuốc lá/ thuốc lào đang cháy và khói do người hút thuốc thở ra môi trường ngay sau khi họ rít thuốc

Để học sinh nhớ được nội dung này, giáo viên cần đặt câu hỏi sau:

Khói thuốc lá là gì?

2. Khói thuốc lá có độc hại không?

- Theo ước tính toàn cầu, có khoảng 700 triệu trẻ em (chiếm 40% trẻ em trên thế giới) phải tiếp xúc với khói thuốc lá tại nhà. Tỉ lệ trẻ sống cùng nhà với ít nhất 01 người hút thuốc là 43%.
- Hàng năm, có khoảng gần 170.000 trẻ em trên thế giới bị tử vong vì các bệnh có liên quan tới việc hít ngửi khói thuốc lá.
- Tại Việt Nam, hiện không có số liệu thống kê chính thức về số lượng trẻ em phải sống trong các gia đình có từ 01 người hút thuốc lá trở lên cũng như số lượng trẻ em bị ốm, tử vong do các bệnh có liên quan tới việc hít/ ngửi khói thuốc lá.
- Tổ chức Y tế thế giới (WHO) đã chứng minh:
    - Trong khói thuốc lá có hơn 7.000 hóa chất độc hại, trong đó:
        - 250 chất gây nguy hiểm tới sức khỏe con người
        - 69 chất có thể gây ung thư cho con người

Hình 2. Khói thuốc lá rất độc hại đối với sức khỏe trẻ em

- Cả người lớn không hút thuốc và trẻ em đều bị ảnh hưởng sức khỏe khi hít phải khói thuốc lá
- Tiếp xúc với khói thuốc lá ở bất kỳ hàm lượng nào cũng đều nguy hiểm tới sức khỏe → Cần tránh tiếp xúc với khói thuốc lá.
- Các đối tượng cần tránh tiếp xúc với khói thuốc lá:
    - **Trẻ em**
    - **Phụ nữ có thai**
    - Người trưởng thành không hút thuốc
    - Người già không hút thuốc

Giáo viên cần lưu ý cung cấp cho học sinh nội dung cốt lõi sau:

Trong khói thuốc lá có:
- hơn 7.000 hóa chất độc hại
- 250 chất gây nguy hiểm cho sức khỏe con người
- 69 chất gây ung thư

Những đối tượng cần tránh tiếp xúc với thuốc lá và khói thuốc lào là tất cả những người không hút thuốc, đặc biệt là **trẻ em** và **phụ nữ có thai**.

Để học sinh nhớ được nội dung này, giáo viên cần đặt câu hỏi sau:

- Trong khói thuốc lá có những chất độc hại gì?

Hoặc

- Em hãy kể những chất độc hại có trong khói thuốc lá?

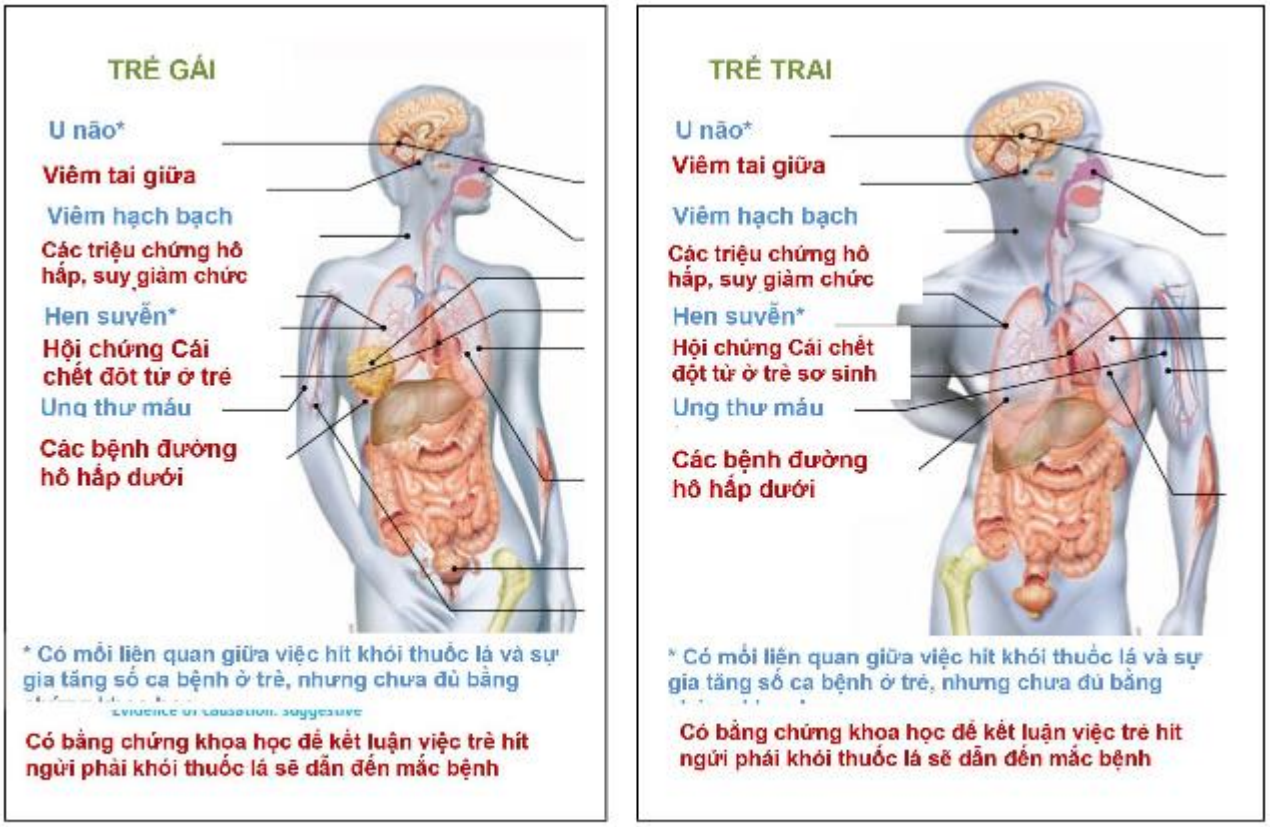
Và:

- Những đối tượng nào cần tránh tiếp xúc với khói thuốc lá và khói thuốc lào?

3. Khi tiếp xúc với khói thuốc lá, trẻ em có thể gặp những nguy cơ gì về sức khỏe?

Khi hít ngửi phải khói thuốc lá trong môi trường, trẻ em có thể gặp rất nhiều các nguy cơ về sức khỏe, thậm chí rất nghiêm trọng và ảnh hưởng tới tính mạng:

- Viêm tai giữa
- Các bệnh đường hô hấp dưới, bao gồm: viêm phế quản, viêm phổi
- Các triệu chứng đường hô hấp trên, bao gồm: ho, khò khè, khó thở, nhiều đờm dãi…
- Đối với những trẻ đã mắc bệnh hen suyễn: khi hít phải khói thuốc lá → có thể làm các cơn hen trở nên trầm trọng hơn, tần suất xuất hiện nhiều hơn.
- Suy giảm chức năng phổi: hít ngửi phải khói thuốc lá làm cho bộ máy hô hấp của trẻ hoạt động kém hơn hẳn so với những trẻ không phải hít ngửi khói thuốc lá.
- Có thể gây ra hội chứng đột tử bất thường ở trẻ sơ sinh: Nếu trong thời kỳ thai nghén, người mẹ mang thai phải tiếp xúc với khói thuốc lá thì nguy cơ đột tử ở trẻ sơ sinh cũng tăng lên. Trong thời kỳ sơ sinh, nếu trẻ phải tiếp xúc với khói thuốc lá, trẻ cũng có thể có nguy cơ bị đột tử ở trẻ sơ sinh.



Hình 3. Các ảnh hưởng tới sức khỏe trẻ em do khói thuốc lá gây ra

(Nguồn: Tổ chức Y tế thế giới, 2009)

Giáo viên cần lưu ý cung cấp cho học sinh những nội dung cốt lõi sau (trừ chứng đột tử bất thường ở trẻ sơ sinh, vì thông tin này hơi khó so với trình độ nhận thức của học sinh):

Khi hít, ngửi phải khói thuốc lá, trẻ em có thể mắc một số bệnh và triệu chứng sau:

- Viêm tai giữa
- Viêm phổi
- Viêm phế quản
- Một số triệu chứng của đường hô hấp trên như:
  - Ho
  - Khò khè
  - Khó thở
  - Nhiều đờm dãi
  - V.v…
- Làm bệnh hen suyễn trở nên nặng hơn
- Suy giảm chức năng phổi

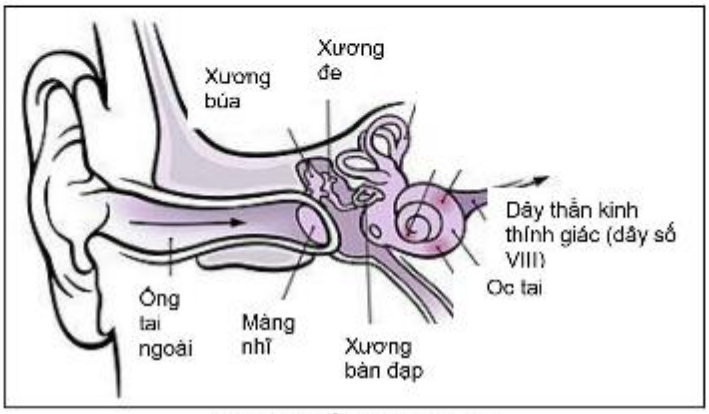
Để học sinh nhớ được nội dung này, giáo viên cần đặt câu hỏi sau:

- Em hãy kể tên những bệnh và những triệu chứng mà em có thể gặp phải nếu em phải hít ngửi khói thuốc lá và khói thuốc lào?

6. Mô tả một số đặc điểm cơ bản tai giữa và hậu quả của viêm tai giữa

6.1.1. Một số đặc điểm cơ bản của tai giữa

Cấu trúc của tai được chia thành 3 phần: Tai ngoài, tai giữa và tai trong



Hình 4. Cấu trúc của tai

- Tai ngoài: gồm vành tai và ống tai ngoài.
- Tai giữa: gồm màng nhĩ và một hốc xương gọi là hòm tai (gồm 3 xương nhỏ).
- Tai trong: là đầu mối thần kinh tiếp nhận các tín hiệu âm thanh truyền qua dây thần kinh thính giác (dây số VIII) lên não, và nhờ đó mà người ta nghe được. Tai trong nằm trong một hốc xương có hình xoắn 2 vòng rưỡi nên gọi là ốc tai.

6.1.2. Hậu quả của viêm tai giữa

Tai giữa đóng vai trò đặc biệt quan trọng trong cơ chế sinh lý nghe, nhất là hệ thống màng nhĩ - xương con. Do vậy, nếu tai giữa bị viêm có thể dẫn đến nghe kém hoặc điếc ở trẻ.

Viêm tai giữa là dạng viêm khá phổ biến, có thể gặp ở mọi lứa tuổi, nhưng phổ biến nhất là trẻ dưới 1 tuổi và trẻ em nói chung. Khoa học đã chứng minh rằng tiếp xúc với khói thuốc lá trong môi trường là một trong những yếu tố nguy cơ dẫn đến tình trạng viêm tai giữa ở trẻ em.

7. Làm thế nào để phòng tránh sự tiếp xúc của trẻ với khói thuốc lá?

- Cách tốt nhất là trẻ cần được sống trong môi trường hoàn toàn không có khói thuốc lá hoặc khói thuốc lào.

Hình 5. Việc hút thuốc trong nhà, bên cạnh trẻ vẫn thường xuyên xảy ra tại các hộ gia đình, đặc biệt là các hộ gia đình ở nông thôn Việt Nam

- Nếu trong gia đình có người hút thuốc lá hoặc thuốc lào, cần tránh sự tiếp xúc của trẻ với khói thuốc lá hoặc khói thuốc lào:
    - Không hút thuốc lá/ thuốc lào trước mặt trẻ
    - Không hút thuốc lá/ thuốc lào trong nhà, kể cả khi không có mặt trẻ ở nhà. Khi hút thuốc lá/ thuốc lào trong nhà, khói thuốc lá/ thuốc lào có thể bám vào các rèm cửa, chăn, chiếu, màn… trong nhà và tồn tại đến hàng tuần. Trẻ hít ngửi phải hơi thuốc này từ rèm cửa, chăn, chiếu, màn… vẫn bị ảnh hưởng có hại tới sức khỏe.
    - Người mẹ cần khuyên nhủ người bố và những người khác trong gia đình không hút thuốc lá trong nhà và không hút thuốc lá trước mặt trẻ em.

Vì lợi ích của con trẻ, người lớn hãy dừng ngay việc hút thuốc lá trong nhà (trong phòng khách, phòng ngủ, khu vực ăn uống, bếp…)

Hình 6. Trẻ em là nạn nhân của khói thuốc lá

8. Bản thân trẻ có thể làm gì để tránh tiếp xúc với khói thuốc lá? Người thân có thể giúp trẻ như thế nào để trẻ không phải tiếp xúc với khói thuốc lá?

- Nếu thấy người lớn hút thuốc, trẻ cần tránh đi nơi khác để tự bảo vệ bản thân mình khỏi các bệnh do khói thuốc lá gây ra.
- Trẻ cần được cung cấp đầy đủ kiến thức về tác hại của khói thuốc lá và khói thuốc lào đối với sức khỏe của trẻ để giải thích cho bố và những người hút thuốc khác trong gia đình.
- Người mẹ và bản thân các trẻ đủ lớn và đủ nhận thức cần biết cách vận động người bố và những người hút thuốc khác trong gia đình không hút thuốc trong nhà, họ cần đi ra ngoài hút thuốc để bảo vệ sức khỏe cho con cái họ.
- Khi được vận động, người bố và những người hút thuốc khác trong gia đình cần hiểu và thông cảm với việc làm của vợ/ con mình và làm theo yêu cầu của vợ/con.

Các thầy cô giáo cần lưu ý cung cấp cho học sinh các nội dung cốt lõi sau:

Trẻ cần biết tự bảo vệ mình khỏi tiếp xúc với khói thuốc lá bằng cách:

- Tránh đi chỗ khác để không phải hít ngửi khói thuốc lá
- Hiểu rõ về tác hại của khói thuốc lá với sức khỏe trẻ em để giải thích cho bố mẹ và người lớn trong gia đình:
  - Viêm tai giữa
  - Viêm phổi
  - Viêm phế quản
  - Ho, khò khè, khó thở, nhiều đờm dãi
  - Làm bệnh hen suyễn nặng hơn
  - Suy giảm chức năng phổi
- Chủ động thuyết phục bố (nếu bố hút thuốc) và những người hút thuốc khác không hút thuốc lá trong nhà

Để học sinh nhớ được nội dung này, giáo viên cần đặt câu hỏi sau:

- Trẻ em có thể tự bảo vệ mình khỏi tiếp xúc với khói thuốc lá/ thuốc lào bằng cách nào?

PHẦN 2.

THUYẾT PHỤC BỐ VÀ NGƯỜI LỚN KHÔNG HÚT THUỐC TRONG NHÀ NHƯ THẾ NÀO?

1. Thói quen hút thuốc của người Việt Nam

- Phong tục, tập quán lâu đời của người Việt Nam chấp nhận thói quen hút thuốc trong nhà và trước mặt trẻ em.
- Uống trà và hút thuốc là thói quen được nhiều thế hệ Việt Nam chấp nhận, đặc biệt ở vùng nông thôn Việt Nam.
- Khi có khách tới nhà, người Việt Nam thường mời uống trà, hút thuốc.
- Trong các đám cưới, đám tang, việc hút thuốc vẫn thường xảy ra.

Hình 8. Nhiều người Việt vẫn chấp nhận thói quen hút thuốc trong nhà, nơi đông người và có mặt trẻ

2. Người lớn có nổi giận khi trẻ em vận động họ không hút thuốc trong nhà không?

- Nếu người lớn không hiểu rõ tác hại của hút thuốc lá tới sức khỏe của con em họ, họ rất có thể nổi giận khi trẻ vận động họ không hút thuốc lá trong nhà.
- Nếu trẻ không khéo léo trong cách vận động, thuyết phục người lớn không hút thuốc trong nhà → rất có thể có những cơn thịnh nộ của người lớn đổ lên đầu trẻ.
- Nếu người mẹ không phối hợp tốt với trẻ trong việc giải thích, vận động, thuyết phục người bố không hút thuốc lá trong nhà → trẻ cũng có thể bị bố hoặc người hút thuốc khác cáu giận.

Hình 7. Người bố rất có thể sẽ cáu với trẻ khi trẻ vận động bố không hút thuốc trong nhà

Giáo viên cần lưu ý học sinh các nội dung cốt lõi sau:

- Khi bố đang hút thuốc, nếu trẻ vận động, thuyết phục bố không đúng cách và đúng lúc, bố có thể cáu giận với trẻ, chẳng hạn thời điểm nhà đang có khách, lúc bố đang mệt, đang cáu hoặc đang giận ai đó.
    - Những lúc như vậy, trẻ cần tránh đi chỗ khác để khỏi phải hít/ ngửi khói thuốc lá hoặc khói thuốc lào
- Nếu bố cáu hoặc giận, trẻ cần nhờ mẹ giúp đỡ để tránh cơn thịnh nộ của bố
- Đợi đến thời điểm thích hợp (khi khách về, khi bố hết mệt, hết cáu…), trẻ cần khéo léo thuyết phục bố và những người hút thuốc khác không hút thuốc trong nhà.
- Nhờ thêm mẹ cùng phối hợp để vận động bố và những người khác không hút thuốc trong nhà.

Để học sinh nhớ được các nội dung này, giáo viên cần đặt các câu hỏi sau:

- Những lúc nhà đang có khách và bố đang hút thuốc cùng khách trong nhà, em cần làm gì?
- Bố có thể nổi giận khi em thuyết phục bố đi ra ngoài hút thuốc không? Tại sao?
- Nếu bố nổi giận, em cần làm gì?
- Thời điểm thích hợp để em thuyết phục bố không hút thuốc trong nhà là lúc nào?
- Trong gia đình của em, em có thể nhờ ai phối hợp cùng để thuyết phục bố và những người khác không hút thuốc trong nhà?

3. Làm thế nào để trẻ có thể vận động người lớn không hút thuốc trong nhà?

3.1. Trẻ cần hiểu rõ về tác hại của khói thuốc lá tới sức khỏe của bản thân các em:

- Giảng dạy kỹ cho trẻ về tác hại của khói thuốc lá tới sức khỏe trẻ em tại trường học:
    - Thông qua các bài giảng của giáo viên trên lớp về tác hại của khói thuốc lá tới sức khỏe trẻ em (trong giờ tự học).
    - Thông qua việc giảng lặp lại các nội dung này một cách thường xuyên các bài giảng hàng tuần để trẻ ghi nhớ.
    - Thông qua các buổi thực hành trên lớp để trẻ có thể đóng vai, thực hành việc vận động, thuyết phục người lớn không hút thuốc trong nhà và trước mặt trẻ với sự giúp đỡ của thầy cô giáo và bạn học.
    - Thông qua các cuộc thi tìm hiểu về tác hại của khói thuốc lá với sức khỏe trẻ em được tổ chức tại trường học:
        - Thi tìm hiểu
        - Vẽ tranh
        - Ngăn tượng

3.2. Trẻ cần có thái độ tích cực, dứng đắn trong việc tự bảo vệ mình khỏi tác hại của khói thuốc lá:

- Không đồng ý với tình trạng hút thuốc trong nhà của người thân:
    - Cảm thấy buồn, không hài lòng với việc bố hoặc người thân hút thuốc trong nhà và trước mặt trẻ

Hình 8. Trẻ cần tỏ thái độ rõ ràng, dứt khoát, có tính thuyết phục với việc hút thuốc trong nhà của người lớn

- Tin tưởng rằng mình có thể thành công trong việc vận động bố và người thân không hút thuốc trong nhà và không hút thuốc trước mặt trẻ
- Trẻ cần hiểu rõ rằng việc vận động, thuyết phục bố mẹ và người thân không hút thuốc trong nhà là một hành động đúng, không phải là một hành động hỗn xược hay sai trái. Trẻ cần hiểu rằng người lớn khi hiểu ra vấn đề sẽ sẵn sàng ủng hộ trẻ.

Giáo viên cần lưu ý học sinh nhớ một số nội dung cốt lõi sau:

Học sinh cần tỏ thái độ rõ ràng, dứt khoát và có tính thuyết phục đối với tình trạng hút thuốc trong nhà của người lớn:

- Buồn, không hài lòng với việc hút thuốc trong nhà của người lớn
- Việc trẻ giải thích với bố mẹ và những người lớn trong nhà về tác hại của khói thuốc lá tới sức khỏe trẻ em là một việc cần thiết, vì người lớn sẽ:
    - Nhận ra tầm quan trọng của việc tránh cho trẻ tiếp xúc với khói thuốc lá
    - Nhận thấy việc trẻ thảo luận về chủ đề tác hại của khói thuốc lá tại gia đình là cần thiết
    - Ủng hộ việc làm của trẻ.

Học sinh cần tin tưởng rằng:

- Việc vận động, thuyết phục bố (nếu bố hút thuốc) và những người hút thuốc khác trong gia đình đi ra ngoài hút thuốc là đúng, không phải là hành động hỗn xược
    - Trẻ biết thuyết phục là trẻ biết tự bảo vệ sức khỏe của chính mình.

Để học sinh nhớ được các nội dung này, giáo viên cần đặt các câu hỏi sau:

- Khi có người hút thuốc trong nhà, em cảm thấy thế nào?
- Có cần thiết phải giải thích với bố mẹ và những người lớn trong nhà về tác hại của khói thuốc lá đối với sức khỏe trẻ em không? Tại sao?
- Việc vận động, thuyết phục bố và những người hút thuốc khác đi ra ngoài hút thuốc lá có phải là một hành động hỗn xược không? Tại sao?

3.3. Trẻ cần thực hành việc giải thích với bố mẹ và người thân về tác hại của khói thuốc lá tới sức khỏe trẻ em tại hộ gia đình

- Khi trẻ đã hiểu về tác hại của khói thuốc lá tới sức khỏe của bản thân chúng, giáo viên cần yêu cầu trẻ thực hành tại hộ gia đình:
  - Trẻ cần giải thích với bố mẹ, người thân về tác hại của khói thuốc lá.
- Để làm được việc này, trẻ cần được giáo viên chú trọng các kỹ năng trình bày ý kiến với người lớn. Trẻ lớp 4 được học kỹ năng này ở môn "Đạo đức". Giáo viên lớp 4 và lớp 5 cần cho trẻ thực hành thường xuyên kỹ năng này tại lớp học. Đối với học sinh lớp 3, để các em có thể giải thích được tác hại của khói thuốc lá đối với sức khỏe trẻ em cho người lớn trong gia đình, giáo viên cần hướng dẫn sơ bộ cho các em, hoặc có thể giới thiệu nội dung này tại lớp cho học sinh lớp 3.
- Trẻ cần nêu được các bệnh chính mà khói thuốc lá gây ra cho sức khỏe trẻ em nếu như trẻ em hít/ngửi phải khói thuốc lá cho bố mẹ nghe:
  - Bệnh viêm tai giữa
  - Bệnh viêm đường hô hấp dưới (viêm phế quản, viêm phổi)
  - Các triệu chứng của đường hô hấp trên (ho, sốt, chảy nước mũi, nhiều dờm dãi, khó thở, thở khò khè…)
  - Trẻ bị mắc bệnh hen có thể bị trầm trọng hơn nếu hít ngửi phải khói thuốc lá
  - Suy giảm chức năng phổi ở trẻ
  - Đột tử bất thường ở trẻ sơ sinh

Giáo viên cần lưu ý học sinh một số nội dung cốt lõi sau:

Giải thích với bố mẹ về tác hại của khói thuốc lá đối với sức khỏe trẻ em:
- Nêu các bệnh/ triệu chứng mà trẻ có thể gặp phải khi phải tiếp xúc với khói thuốc lá (phần 1)

Để học sinh thực hành được việc giải thích với bố mẹ về tác hại của khối thuốc lá đối với sức khỏe trẻ em, giáo viên cần:

Cho trẻ thực hành đóng vai trên lớp, với các vai diễn cụ thể như sau:

- 01 học sinh đóng vai bố hút thuốc
- 01 học sinh đóng vai mẹ
- 01-02 học sinh đóng vai những người thân khác trong nhà
- 01 học sinh đóng vai trẻ từ 8-11 tuổi.

- Trẻ đóng vai học sinh cần giải thích với các thành viên khác trong gia đình mình về những tác hại của khối thuốc lá và nêu được đầy đủ các tác hại của khối thuốc lá đối với sức khỏe trẻ em
- Các học sinh khác trong lớp cùng nhận xét, góp ý cho các vai diễn và rút kinh nghiệm.

3.4. Khi người lớn đã hiểu tác hại của khói thuốc lá tới sức khỏe trẻ em, trẻ cần vận động người lớn không hút thuốc lá trong nhà và trước mặt trẻ em:

- Trẻ cần khéo léo thuyết phục bố và những người hút thuốc khác trong gia đình không hút thuốc lá trong nhà.
- Để làm được việc này, trẻ cần thực hành lại các nội dung "đề nghị" đã được học ở môn Đạo đức lớp 2. Các cô giáo cần cho trẻ (lớp 3 - lớp 5) thường xuyên thực hành lại nội dung này trên lớp vào các giờ tự học buổi chiều. Trẻ cần nhờ tới sự giúp đỡ của mẹ trong quá trình nhắc nhở bố và những người hút thuốc khác trong gia đình trẻ.
- Các thầy/ cô giáo có thể giúp học sinh bằng cách nhắn nhủ với bố mẹ trẻ trong buổi họp phụ huynh học sinh đầu năm, sơ kết học kỳ 1 về những việc trẻ có thể sẽ thực hiện tại nhà trong năm học 2011-2012 và đề nghị phụ huynh học sinh ủng hộ con em họ, đề nghị các mẹ giúp đỡ con em họ trong việc thuyết phục, vận động người cha không hút thuốc lá trong nhà và trước mặt trẻ con. Trong buổi họp phụ huynh tổng kết cuối năm, các thầy/ cô cần hỏi lại các bậc phụ huynh về mức độ tham gia của họ trong chương trình can thiệp.
- Các thầy/ cô cần hướng dẫn học sinh chọn thời điểm thích hợp để vận động bố và những người lớn khác không hút thuốc trong nhà:
    - Khi bố và những người lớn ấy đang vui vẻ
    - Khi mẹ có nhà
    - Tránh chọn lúc bố đang tiếp khách và đang hút thuốc với khách để vận động.
        - Những lúc đó, trẻ có thể tránh đi nơi khác để khỏi phải tiếp xúc với khói thuốc lá.
        - Sau khi khách ra về, trẻ có thể nhẹ nhàng nhắc nhở bố lần sau có khách cũng không nên hút thuốc trong nhà và trước mặt trẻ

- Khi bố và những người hút thuốc đang vui vẻ, trẻ có thể nhẹ nhàng nhắc bố:
  - "Bố ơi, con bị ho/ con bị khó thở khi ngửi phải khói thuốc"
  - "Bố ơi, bố có thể ra ngoài hút thuốc được không? Con cảm ơn bố"
  - "Bố ơi, bố có biết là khi hít phải khói thuốc lá, con có thể sẽ bị mắc các bệnh viêm phổi và viêm phế quản không?"
  - "Bố ơi, hít khói thuốc lá là con có thể bị hen suyễn đấy bố ạ!"
  - V.v…
- Nếu bố nổi cáu, học sinh cần tìm sự trợ giúp của mẹ. Người mẹ có thể nhẹ nhàng khuyên can bố không nên cáu giận với con.
  - Người mẹ cần giải thích rõ với người bố việc con làm là đúng đắn, người bố không nên hút thuốc trước mặt con để tránh sự tiếp xúc của con với khói thuốc lá
  - Người mẹ có thể can ngăn bố để tránh việc trẻ có thể bị bố đánh, chửi.

Giáo viên cần lưu ý học sinh một số nội dung cốt lõi sau:

Nếu bố nổi cáu, cần cầu cứu sự giúp đỡ của mẹ. Mẹ có thể giúp trẻ giải thích cho bố và can ngăn bố không đánh, mắng trẻ.

Hình 9. Người mẹ cần sát cánh bên con trong công cuộc nhắc nhở người cha và những người lớn khác không hút thuốc trong nhà

Giáo viên cần lưu ý học sinh một số nội dung cốt lõi sau:

Những mẫu câu thuyết phục mà trẻ có thể áp dụng tại nhà:

- Bố ơi, con đang bị ho bố ạ! Bố đừng hút thuốc trong nhà nữa nhé!
- Bố ơi, bố ra ngoài hút thuốc được không? Con cảm ơn bố!
- Bố ơi, cô giáo bảo là khi hít phải khói thuốc lá con có thể bị viêm phổi hoặc viêm phế quản đấy bố ạ!
- Bố ơi, con có thể bị khò khè, khó thở khi hít phải khói thuốc lá. Bố có thể ra ngoài hút thuốc được không ạ? Con cảm ơn bố!
- Bố ạ, từ giờ mỗi khi hút thuốc bố có thể ra ngoài hút được không? Cô giáo và mẹ bảo con là trẻ con hít khói thuốc lá là không tốt cho sức khỏe
- V.v…

Để học sinh thực hành được việc vận động bố và những thành viên khác trong gia đình không hút thuốc trong nhà, giáo viên cần:

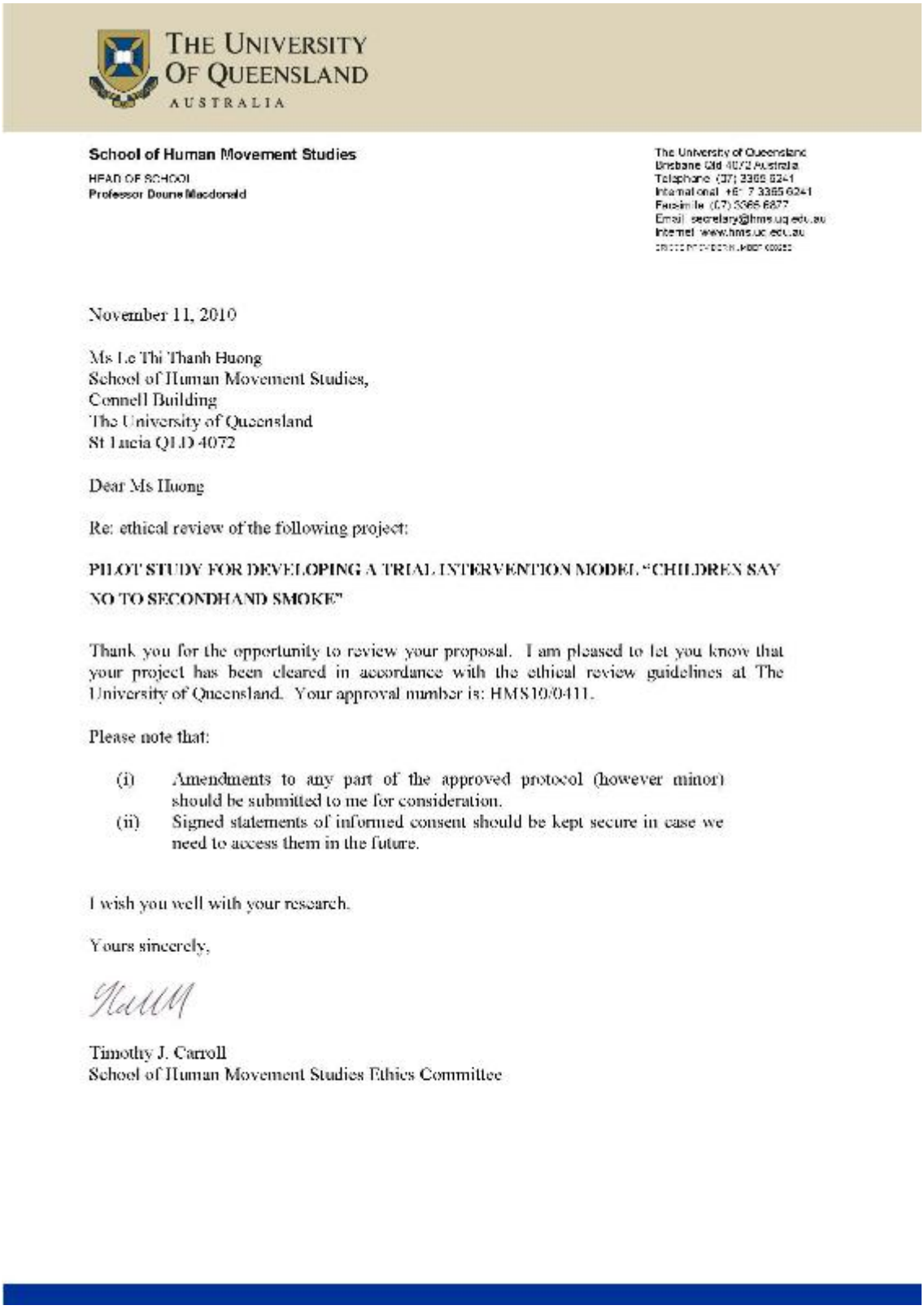
Cho trẻ thực hành đóng vai trên lớp, với các vai diễn cụ thể như sau:

- 01 học sinh đóng vai mẹ
- 01-02 học sinh đóng vai những người thân khác trong nhà
- 01 học sinh đóng vai trẻ từ 8-11 tuổi.
- 01 học sinh đóng vai bố hút thuốc và sẽ cáu khi con thuyết phục

- Trẻ đóng vai học sinh cần thuyết phục bố không hút thuốc trong nhà, trẻ đóng vai mẹ sẽ giúp con ủng hộ việc mời bố ra ngoài hút thuốc lá
- Các học sinh khác trong lớp cùng nhận xét, góp ý cho các vai diễn và rút kinh nghiệm.

Appendix 8 Ethical Clearances

Appendix 8.1 Ethical Clearances of the Pilot Study granted by the School of Human Movement Studies (University of Queensland)



THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

School of Human Movement Studies
HEAD OF SCHOOL
Professor Doune Macdonald

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Email secretary@hms.uq.edu.au
Internet www.hms.uq.edu.au

November 11, 2010

Ms Le Thi Thanh Huong
School of Human Movement Studies,
Connell Building
The University of Queensland
St Lucia QLD 4072

Dear Ms Huong

Re: ethical review of the following project:

PILOT STUDY FOR DEVELOPING A TRIAL INTERVENTION MODEL "CHILDREN SAY NO TO SECONDHAND SMOKE"

Thank you for the opportunity to review your proposal. I am pleased to let you know that your project has been cleared in accordance with the ethical review guidelines at The University of Queensland. Your approval number is: HMS10/0411.

Please note that:

(i) Amendments to any part of the approved protocol (however minor) should be submitted to me for consideration.
(ii) Signed statements of informed consent should be kept secure in case we need to access them in the future.

I wish you well with your research.

Yours sincerely,

Timothy J. Carroll
School of Human Movement Studies Ethics Committee

Appendix 8.2 Ethical Clearance of the Full Study granted by the Ethical Review Board for Biomedical Research (Hanoi School of Public Health)

MINISTRY OF HEALTH
HANOI SCHOOL OF PUBLIC HEALTH
No.: **008/2011**/YTCC-HD3
Subject: Ethical Approval

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom - Happiness

Ha Noi, March 10, 2011

DECISION

On Ethical approval for research involving human subject participation

THE CHAIR OF THE ETHICAL REVIEW BOARD FOR BIOMEDICAL RESEARCH
HANOI SCHOOL OF PUBLIC HEALTH

- Based on Decision No. 645/QD-YTCC by the Dean of Hanoi School of Public Health on Establishment of The Institutional Ethical Review Board of Hanoi School of Public Health; 07 November 2003 ;
- Based on decision No. 491/QĐ-YTCC by the Dean of Hanoi School of Public Health on the Issuing Regulation of the Insitutional Ethical Review Board of Hanoi School of Public Health; 24 September 2004;
- After reviewing research ethics application No. **010-021**/DD-YTCC approved on September 01, 2010, and the application documents for the renewal of this project submitted on March 04, 2011;
- And based on the memo dated **March 08, 2011.**

DECIDED

Article 1. Grant ethical approval for clinical study project:

- Project Title: **Developing a trial intervention model "Children Say No to Secondhand Smoke"– Version 2.0 dated 04 March, 2011**.
- Principal Investigator : **Le Thi Thanh Huong, Msc**
  Department of Environmental Health, Hanoi School of Public Health
  Ph.D Candidate – UQ ID: 42230263. School of Human Movement Studies
  Faculty of Health Science, University of Queensland QLD 4072
- Research sites: Quảng Bị, Trung Hòa, and Tốt Động primary schools of Chương Mỹ district, Hà Nội
- Data collection time: from 3/2011 to 31/05/2012
- Study time: from 15/09/2010 to 30/09/2012

Article 2. This decision is effective from **3/10/2011** to **3/10/2012**

Article 3. Principle Investigator should notify the Institutional Ethical Review Board of Hanoi School of Public Health (IRB of HSPH) immediately of any adverse effects arising from this study (e.g. unexpected adverse outcomes, unexpected community/subject risk factors or complaints, etc.). Active research projects are subject to random audit by the IRB of HSPH.

ON BEHALF OF
CHAIR OF INSTITUTIONAL ETHICAL REVIEW BOARD
(Signature and full name)

Le Cu Linh

SECRETARY
(Signature and full name)

Le Thi Kim Anh

Appendix 8.3 Ethical Clearance of the Full Study granted by the Behavioural & Social Sciences Ethical Review Committee (University of Queensland)

THE UNIVERSITY OF QUEENSLAND

Institutional Approval Form For Experiments On Humans Including Behavioural Research

Chief Investigator:	Ms Le Thi Thanh Huong
Project Title:	Developing A Trial Intervention Model "Children Say No To Secondhand Smoke
Supervisor:	Prof Mike Capra, Dr Margaret Cook, Prof Le Vu Anh
Co-Investigator(s)	None
Department(s):	School of Biomedical Sciences
Project Number:	2011000250
Granting Agency/Degree:	AusAID Scholarhip; American Cancer Society
Duration:	30th March 2015

Comments:

Name of responsible Committee:-
Behavioural & Social Sciences Ethical Review Committee
This project complies with the provisions contained in the *National Statement on Ethical Conduct in Human Research* and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:-
Associate Professor John McLean
Chairperson
Behavioural & Social Sciences Ethical Review Committee

Date 25/3/2011 Signature

Appendix 9 Winingprize pictures awarded by the Youth and Pupil Council of the full intervention school

First prize

Second prize

Third prize